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5 AUGUST 1986

EUROPE REPORT

SCIENCE AND TECHNOLOGY

WEST EUROPE

EAST EUROPE

WEST EUROPE/ADVANCED MATERIALS

MBB DEVELOPS AUTOMATIC FIBER REINFORCEMENT TAPE LAYING HEAD

Frankfurt/Main FRANKFURTER ZEITUNG/BLICK DURCH DIE WIRTSCHAFT in German
13 May 86 p 5

[Article: "Tape Laying Head for Automatic Reinforcing MBB (Messerschmitt-Bölkow-Blohm GmbH): A Step Toward the Low-Cost Manufacture of Fiber-Reinforced Parts"]

[Text] To make possible the industrial manufacture of fiber-reinforced synthetics it must also be possible to lay the reinforcing fibers automatically. The Hamburg production technology laboratory of Messerschmitt-Bölkow-Blohm GmbH has now developed a new type of laying head with which any industrial robot can automatically embed carbon-fiber tape in a part being manufactured. In contrast to the 1.5-ton tape laying head previously used for carbon-fiber processing in the company's main production area, the new laying head weighs only 20 kilograms. MBB reports that the total weight, inclusive of material, is 30 kilograms. Under the guidance of an industrial robot, the tape laying head can then be used to lay carbon-fiber strips in any direction, even spherically. Because of its mobility and ease of operation, the head is able to handle any surface specified by the computer. According to the company, this makes the tape laying unit a computer-controlled system with high mobility, ease of operation, and the capacity for precision work.

MBB stated that its new tape laying head will be used in the manufacture of the nine-meter-high, carbon-fiber-reinforced rudder for the Airbus. After the robot has used grippers to lay down the modular core which is necessary for the construction of the fiber-reinforced structure, it can connect with the tape laying head to lay the carbon-fiber tape on the series of modular cores and press it on as webbing. This gives the tail unit an inner structure which is capable of absorbing all static and dynamic loads.

The technology used for the tape laying head basically involves synchronized individual activities, from the detachment of the tape from its protective foil and mounting paper, through the cutting of the tape and its being laid as webbing on the series of modular cores, to the rolling up of the detached strips of paper and foil. The control signals for the tasks are transmitted to the laying head by the robot, which in turn receives its information from a supervisory computer. The tape is cut in four different planes by band cutters designed to provide an exact cutting geometry.

13114/5915
CSO: 3698/502

WEST EUROPE/AEROSPACE

BRIEFS

ESA ACCEPTS FINLAND--Finland is joining the European Space Agency (ESA) on Friday [27 June], the ESA Council gave unanimous approval to the three agreements negotiated with Finland, and authorized Reiman Luestin to sign them. The agreements concern Finnish associate membership in the ESA scientific research program and its remote sensing program. The agreements, which were negotiated starting last November, will receive final signature in September. [Text] [Helsinki HELINGSIN SANOMAT in Finnish 28 Jun 86 p 25] /12232

CSO: 3698/547

WEST EUROPE/CIVIL AVIATION

NEW AIRCRAFT PRINCIPLES TESTED BY AERITALIA

Rome SCIENZA DUEMILA in Italian No 5, May 86 pp 81-82

[Article by Alberto Mondini: "Aeronautical Technologies, an Impulse to Research"; first paragraph is SCIENZA DUEMILA introduction]

[Excerpts] From the "Coanda effect" aircraft to the pilotless fighter, Italy's main aircraft company is carrying out extremely advanced projects which have earned it patents even in the United States and in Japan.

A patent has been obtained by Aeritalia in Italy and in the United States "for a jet propulsion aircraft using a single-face ejector system to increase the aerodynamic lift and thrust." The necessary actions have been undertaken for obtaining the patent in other European countries and in Japan. All studies and experiments, which are still in progress, are carried out by the Unita Innovazioni Tecnologiche of the Gruppo Velivoli da Combattimento, directed by Alfredo Capuani.

The fact that a patent has been granted in the United States, where nothing is patented unless newness has been proved, indicates that the discovery of Mr Capuani's team is a different system, though similar to what we saw on the Boeing YC 14. An original discovery, then, which has brought into production models for wind tunnel and comprehensive theoretical studies.

Another very important research field of Aeritalia consists of pilotless airplanes--Mirachs produced by Meteor, a company which is part of the group. They started with aerotargets for anti-aircraft artillery and then for missiles, but they now produce pilotless airplanes to observe battlefields.

The CATRIN, a transmission and information field system, for which the Italian Parliament has recently approved financial support, includes among its subsystems the SORAO, surveillance and acquisition of objectives, which also envisages the use of pilotless airplanes. Meteor also makes its products available for environmental protection and for reconnaissance and rescue missions in case of disasters, such as earthquakes, floods, plan crashes, etc.

Within the purview of continually improving Meteor products, a third version of Mirach 100 is under study, and a prototype is being developed of the naval

version for the Mirach 20, called Pellicano. It is characterized by its ability to see what is on the "mother" ship beyond the horizon, thanks to images taken from above and sent down to the ground in real time. But there is also the bigger Mirach 300, and the 600 has been announced, a sort of giant which could also be used for aerial combat.

Who knows if the future holds for us air battles fought by pilots placed in safe armored shelters, challenging each other by making their pilotless airplanes perform reckless maneuvers and deadly attacks zigzagging in the sky but controlled from the earth.

It will certainly be a more civilized system than the one used so far. A fighter pilot, a friend of mine, to whom I spoke about this, answered, without hiding a grimace of disgust: "It would be like playing war with toy soldiers."

There is no doubt, however, that RPV, remotely piloted vehicles, will have a future which perhaps is still inconceivable in times of extreme automation and continual progress.

These are some indications of the research in progress at Alitalia in which the Italian aircraft industry continues its renowned traditions of the past: very accurate and reliable research conducted in the experimental center of Guidonia and at the main factory.

[Box p 82] The European fighter, whose development has been joined so far by four nations--the three Tornado countries [West Germany, Great Britain and Italy] plus Spain--will really represent a leap forward in technology; but can we say the same of every new aircraft?

Certainly not "every"; it is much more convenient and safe to adopt tested solutions, to carry out something which falls within "the state of the art," as the Americans say, than to create a machine which is brand new facing a great deal of risks.

It is, however, stupid to design an aircraft which will be born old. In order to do something new and to reduce the risks it has been decided to have the European Fighter Aircraft [EFA] preceded by an experimental demonstrator aircraft, a single prototype on which new aerodynamic and structural solutions will be tested, chiefly in the field of materials, as the intention is to build the European fighter with a percentage of carboresin composite materials which could go as high as 50 percent.

And now, in Turin, the EAP [Experimental Aircraft Program] wing is born, with its double delta shape, almost entirely made of carbon fibers and with a reduced number of mechanical connecting elements, in order to obtain a considerable weight reduction, together with high structural characteristics. The wing shape, which has a very reduced aspect ratio and is joined to the fuselage by a long section, is such as to reconcile the opposite requirements of having a reduced aerodynamic drag and a good lift at minimum speed.

Aeritalia took part in the design together with British Aerospace, and made use of the experiences acquired using the carbon fiber components in commercial airplanes, especially when creating a primary structural element such as the AMX fin, which has already passed the flight test.

A very important step in wing construction is represented by the completion of the treatment cycles in the autoclave of the main carbon-fiber components. The process consists of assembling the wing panels in a special expanding metal and rubber fixture, with the inner carbon-fiber spars still fresh from rolling and carrying a layer of adhesive on the surface in contact with the lower panel and a separator on the surface in contact with the upper panel. After thé autoclave treatment, the spars remain integral with the lower panel, while the upper panel, after being removed to allow equipping inside of the wing, is subsequently connected to the main structure by means of mechanical elements.

The perfect success of the adhesion stage, which required a long and complex preparation, represents a particularly valuable result in the development of the aeronautical structures. The wing has been sent to British Aerospace, where it has been mounted on the EAP airplane which has flown.

A second wing has been produced, still by Aeritalia, for static structural tests.

This experimental aircraft, which has just started its flight program, will teach the designers of the future fighter aircraft a great deal of things about aerodynamics, structures and materials. But it already taught a lot before taking to flight, as its design and production brought out a lot of problems which had to be solved by factory engineers and designers. This is because this machine is not a prototype of EFA, but a flying experiment intended and conceived in that way. "It can even be, people say in Turin and in Warton, that EFA will not be at all similar to this, its predecessor."

8625/12795
CSO: 3698/M139

WEST EUROPE/CIVIL AVIATION

NORDIC AIRCRAFT INDUSTRY COLLABORATION: FOKKER 100, MD-11

Stockholm DAGENS NYHETER in Swedish 4 Jun 86 p 10

[Article by Goran Jonsson]

[Text] Four aircraft industries in Sweden, Norway, and Denmark are combining to form a new joint Scandinavial organization: Scandinavian Aircraft Group (SAG).

The Swedish company in the group is Saab's aircraft division, which has also been the moving force behind the formation of the Scandinavian Aircraft Group.

"By forming this group, we are creating a partner to work with major aircraft manufacturers such as McDonnell Douglas, Boeing, and Fokker," said Henry Stenson of Saab's aircraft division.

Saab is becoming more and more involved in civil aircraft production. Before year's end, over 50 percent of its production will be civil aircraft. In addition to its own SF-340, Saab now manufactures parts for the British Aerospace 146 and the McDonnell Douglas MD-80, which is the official name for what SAS calls the DC-9-80. Saab produces wingflaps and spoilers for the entire MD-80 series.

"By international standards, Saab is not very big or well known," said Henry Stenson, who pointed out that the companies in the group would now find it easier to market their products and become competitive.

Two Planes In Sight

Scandinavian Aircraft is primarily interested in two future aircraft projects: the Fokker 100, a new middle-distance plane (one alternative SAS is considering in its plans to renovate its entire fleet of middle-distance planes) and the MD-11, a further development of the DC-10. The primary goal of the MD-11 is to increase the range of the DC-10.

In addition to Saab's aircraft division, SAG also includes the following:

Raufoss Ammunisjonsfabrikker, a Norwegian engineering firm that produces precision components for the automobile and aircraft industries.

The ASV group: Nordisk Aluminium-Fly is part of the Norwegian group called ASV, which produces reserve tanks for the F-16, pallets and containers for civil aircraft, and aluminum plates and sections.

Per Udsen Aircraft Industri has developed from a mechanical engineering workshop, by way of ship construction, to advanced structures for aircraft parts.

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CSO: 3698/504

WEST EUROPE/COMPUTERS

ITALY'S ENEA UNDERTAKES 'INTELLIGENT' PC PROJECT

Rome SCIENZA DUEMILA in Italian No 5, May 86 pp 87-88

[Article by Cesare Protetti: "Acquisition of Sense Perception"; first paragraph is SCIENZA DUEMILA introduction]

[Text] ENEA [European Nuclear Energy Agency] is going to develop a new project for manufacturing a computer which will be capable of hearing, reading, and talking. This will speed up many commercial and professional activities, especially the office automation sector.

It will not be like Hal, the computer in the film "2001: A Space Odyssey", but it should not be far from it. Some Italian engineers, now working at the Stanford Research Institute, are developing a technology which will allow a personal computer to have senses very similar to those of human beings: sight, touch, hearing, and even speaking. It seems it was Umberto Colombo, the president of ENEA, who gave a name to the project when he first heard about it. The project was proposed to him by a small company from Rome called in fact ISI, and ISI also reminded him of the pronunciation of the English word "easy." Actually what they wanted to develop was a system which would transform computers and information technology into something extremely friendly, "easy." SuperISI will be a computer capable of understanding and executing instructions given by a speaker's voice as well as reading them even when handwritten on a piece of paper. The project will be developed according to an agreement between the ENEA and the national committee for small industries. Its purpose will be to integrate the new technologies with production activities. But it also aims at something more ambitious: to make a larger number of people more familiar with information technology. The project should go through a first phase of study to analyze the practical aspects of the system to see whether it answers the needs of large public and private organizations in some aspects of office work. In particular, it will consider those functions for which there are not yet adequate means of automation such as the counter clerks' functions where the aspect of automating the man-machine relationship is preponderant compared to that of information processing.

In particular, ENEA plans to develop a procedure to examine how office work is organized so as to define all possible applications of the system. After the study of the practical aspects, the following phase will be the development and industrialization of the system whereby it will be possible to "personalize" and adapt it to the needs of those who will actually use it.

The cost of SuperISI should amount to about 25 million lire, but according to the president of ISI, Alberto Tripi, the price will drop rapidly when less expensive components are found and when economies of scale are possible. "But the value of a system like this is actually much higher than 25 million lire," adds Mr Tripi. Let us see now what SuperISI is already able to do.

Adapted to an IBM personal computer and an Olivetti M24 computer, SuperISI has demonstrated to some journalists that it can automate a variety of applications: in factories, offices, banking and health services.

An example of its versatility is "Voice mail": It can store, sort out and then send over the phone up to 1,000 messages to 15 different participants. It is able to understand sequences of 64 words or multiples of this number but the higher the number of these sequences becomes [sequences are analyzed according to a diagram], the longer it takes it to understand and then answer. It can also "read" a handwritten message. In a way, SuperISI has been given the sense of touch: It analyzes and "reads" the accelerations made by a hand when it writes down the different letters of a word on a sheet of paper placed on a board connected to the computer itself.

The two main innovative characteristics of this Italian system are the voice recognition and the "touch" which can be associated with the "sight" given by an optical reader [this device is already in use and it allows a computer to store written information].

The technique of voice recognition is particularly original: The ISI system--which has been developed in cooperation with an American company--simulates the behavior of the human ear. So, the computer has to be trained by the users, and it is independent of the speaker's voice only for simple words like "yes" and "no." This turns out to be a particular advantage in the sector of home automation where security is related to the fact that instructions coming from a stranger's voice ["to bypass the alarm system"] will not be executed by the computer.

However, the most immediate applications of SuperISI are in the industrial and office automation sectors. In factories, warehousemen will give, using their own voices, all the information regarding the incoming raw materials or the outgoing goods; quality controls will also be made using their own voices [the computer will store the information given by a controller]; SuperISI is also capable of answering the phone and talking to those agents calling to confirm an order, after having checked the goods in stock.

This kind of system will be capable of memorizing all clinical information about patients given by the doctor's voice, surgeons will be able to check the equipment of the operating room by voice.

In banks, the customer will be able to do several operations by writing down the information of a graphic board; and he will also be able to receive information over the phone directly from the computer's voice.

As to when this project will be ready, Mr Tripi has optimistic news from the U.S. where, at the Stanford Research Institute, the ISI technicians, in collaboration with specialized American firms, are preparing the final details and overcoming the remaining difficulties.

According to Mr Tripi the system will be ready in a few months since in this field, it is absolutely necessary to be fast in order to stay in the market and beat the competitors. The main technology problems have already been solved. SuperISI's voice is now perfect and it does not even sound "artificial!"

8610/12795
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WEST EUROPE/COMPUTERS

TACTILE GRIP ROBOT DEVELOPED TO WORK AS CIRCUIT BOARD ASSEMBLER

Duesseldorf HANDELSBLATT in German 25-26 Apr 86 p 24

[Article: "Robot GmbH / Optimistic Prospects for New Company in Berlin. Intelligent Gripping System with Fingertip Sensation"]

[Text] Robot GmbH, which was founded in Berlin in June 1985 as a subsidiary of Redar GmbH of Darmstadt, is in the business of developing and manufacturing new types of intelligent gripping systems for robots and manipulating systems. By early 1987 the management hopes to be able to offer a low-cost, market-ready system intended primarily for flexible application to small parts assembly.

According to Robotics Manager Manfred Eisl, the new product is being based on a prototype developed at the Institute for Electromechanical Design of the TH [Technical University], Darmstadt. The special feature of the plans Robot has purchased for the "intelligent gripping system for small parts" consists in the fact that this system has sensors which enable it to recognize the shape of an object and can use a computer to translate this information into a command for the gripper on the robot arm.

This gripping system thus is designed to function something like a human being who is, of course, unable to see, but can use "fingertip sensation" to move around within his limited workspace and perform manual tasks. The fields of application being considered are primarily precision engineering and precision mechanics, areas in which the systems on the market to date have been too complex and cost-intensive.

Along with this project, whose developmental cost is estimated at about DM 2 million, Robot is also marketing other gripping systems. Its main interest in this area is to take over and find solutions for entire series of tasks that customers need to have performed. To ensure a base for the business, Robot is also accepting job orders for printed circuit board assembly. Surface-mounted device technology will also soon be used in this small-scale production of electronic components and subassemblies on a job-by-job basis.

According to Eisl, the main reason Robot GmbH was established in Berlin is the broad technological potential available here, and the related fact that it is easier to get the necessary skilled labor in Berlin than elsewhere in West Germany. Robot employs six workers at present, but the number is to be increased.

WEST EUROPE/COMPUTERS

FRG SUBSIDY TO 'SUPRENUM' DM 100 MILLION; FUTURE CHANCES

[Duesseldorf WIRTSCHAFTSWOCHE in German 9 May 86 pp 68, 72

[Article: "Supercomputers: Fast Thinking Machines"]

A German joint enterprise is about to give the Americans and the Japanese a run for their money with the most ambitious computer project yet to be developed in this country, known as "Suprenum." It is still by no means certain, however, that this widely publicized project, which is being financed with 100 million marks in federal aid, will achieve widespread success on the market.

Booth number 804, with its blue-gray color scheme, looked cold and academic, and, for the moment at least, was quite deserted. There were no exhibits to attract the attention of the curious onlooker, because no product was being sold here, in Hall 16 of the Hanover Industrial Show--just an idea. With this idea, however, the companies which had combined to form the Suprenum-Gesellschaft fuer numerische Superrechner mbH [Suprenum Numeric Supercomputers, Ltd.] of Bonn--i.e., Krupp Atlas Elektronik GmbH [Krupp Atlas Electronics, Inc.] of Bremen, the Gesellschaft fuer Mathematik and Datenverarbeitung (GMD [Mathematics and Data Processing Company]) of Bonn, and the Hamburg systems manufacturer Stollmann GmbH--hope that by the end of this decade they will be leading the field in the high-speed race for technological development.

While those participating in the project have been doing an excellent job cranking out press releases, their supercomputer is only just beginning to take shape on the drawing board. Nevertheless, the concept, which was worked out by Berlin University professor and computer designer Wolfgang K. Giloi, has already created something of a sensation among international computer experts. In contrast to the high-performance systems commonly in use today, where several large processors are connected in a kind of assembly-line configuration, the Suprenum system is designed to perform its computer operations on 256 microprocessors operating in parallel. Parallel computers like the planned Suprenum system can perform sequences of operations simultaneously, while conventional systems operate on the queue principle.

The German computer is able to achieve a high degree of flexibility through the additional use of many small processors: a clever mechanical assembly technique makes it possible to scale the computers to fit any desired

application. For the larger versions the developers are already planning systems which can handle up to 16 billion arithmetic operations per second. This type of performance is based, among other things, on a new type of communications network composed of what are known as node computers. Each note computer in the Suprenum system possesses and controls the exchange of information between the individual node computers. In performing this function, the computers within the computer coordinate instructions which are inevitably complex due to the large number of processors involved.

However, the speed of the Bonn computer system is, first and foremost, the result of intelligent programming. The basis for this speed is the grid method, which scientists have been working on since the early sixties. This long-underestimated mathematical principle was further developed by the GMD as a multi-grid method and today provides the foundation for the speed of the Suprenum computer.

Suprenum Managing Director Ulrich Trottenberg explains that the design and development of the system were not just directed toward the idea of an extremely high-speed computer, but rather toward "an overall concept which interrelated applications, problem-solving, and high-performance hardware." With a large number of programs, the 41-year-old mathematics professor intends to adapt his system to the individual needs of individual groups of users. He figures that there will be sales potential especially in sci-tech disciplines such as aerodynamics, meteorology and plasma physics, and in microelectronics or geology.

To be able to hold their own in these fields, distributors of the Suprenum system will have to stand up to some killer competition. There are currently up to 100 roughly comparable projects in the U.S. and Japan alone. Furthermore, the market for super-fast computers nowadays is completely dominated by American and Japanese manufacturers, who scuffle over every potential sale. The market leader, with 80 percent, is the company started by the legendary computer engineer Seymour R. Cray, who once vowed that he would continue to build the fastest computers in the world for as long as he lived. Consequently his German counterpart at Cray Research GmbH of Munich, Dieter Schneider, does not believe that the planned Suprenum system could develop into any serious competition for him. The concept worked out by the Bonn researchers, he believes, could never achieve the universality of the supercomputers available today. The executive in charge of supercomputer operations at the headquarters of Control Data GmbH in Frankfurt, Ernst Brand, also has doubts about the market success of the Suprenum system: "In this business you have to have staying power and experience in the world market to find an adequate base for your equipment and to ensure the development of follow-up systems."

It takes courage, therefore, for IP System to do what it is doing. This young, six-man company, located in the Karlsruhe Technology Park, has developed a parallel-operating supercomputer which, like the Suprenum system, is designed so that it can use several processors, but whose architecture, the company says, is fundamentally different from that of the Bonn project. The managing director of IP, Wolfgang Woest, 34, formerly a member of the scientific faculty at Karlsruhe University, was able to obtain only "a few million" from

the Federal Research Minister for his newly developed TX2 computer, and had to fill in the gap primarily with venture capital.

This brilliant computer designer does not consider the Suprenum project nearly so momentous as those in charge of it are claiming at the moment. Woest knows what he is talking about, since he was one of the small number of specialists who participated in the design phase on the Suprenum system. It's not that he considers the architecture, designed by his Berlin colleague Giloi, to be poor in any way, but he does feel that the upper limit on performance is nowhere near as flexible as the developers of the Suprenum system are always saying it is. In the related multi-grid method, tremendous amounts of data must be transported for a single computer operation.

This task is performed by what is known as a data bus. The Suprenum team is using a high-speed bus, of course, but, at least in the opinion of IP Director Wost, the data transport system, developed by the Heinrich Hertz Institute of Berlin, encounters natural limitations due to the large number of processors used. Such weaknesses could prove to be a drag on the system when it is marketed.

The authors of a study commissioned by the Federal Research Ministry also had slight misgivings that the Suprenum computer might be rejected by potential customers because it lacked universality as a simulation computer. To justify the company's aggressive stance in the supercomputer business, Heinz Peinze, the Suprenum executive responsible for organizing the project, relies on what he feels are much more relevant statistics. Analyses by the U.S. Board of Trade have shown that beginning in 1990 there will be a worldwide demand for 1000 high-performance computers per year. "As soon as our system is available," he asserts, "we intend to become a powerful voice in the international business as well."

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WEST EUROPE/COMPUTERS

BRIEFS

EXPECTATIONS OF BISTABILITY PROJECT--Hannover--The era of data processing based solely on electronic components could well belong to the past much earlier than is now generally accepted. Five years from now the first usable optical computer can be a reality. This was announced in Hannover by Professor Desmond Smith, the force behind a cooperative European project: the European Joint Optical Bistability Project (EJOB). In this area of research Europe leads the United States by approximately 1 year. The EJOB project is carried out by eight universities and scientific centers in five West European countries: Belgium, the UK, the FRG, Italy, and France. The intention is to examine the possiblity of developing logical elements and circuits based on optical switches. In the end this should result in the construction of usable applications for a computer composed only of optical switches. A general-purpose optical computer will not exist before 1995, says Professor Desmond Smith, but a system consisting only of optical circuits and designed for a specific application is already to be expected early in the next decade. The European Community recognized the importance of this research, which at present gives Europe a clear lead over the United States, by granting a one-time subsidy of 1.8 million ECU (approximately 4.5 million guilders). The participating universities are those of Edinburgh, Brussels, Frankfurt, Strasbourg, Milan, Pisa, and Munich. A Netherlands university or high school is not included in this list. Professor Desmond Smith could not say why. [By Bert Lubbers] [Excerpts] [Amsterdam COMPUTERWORLD in Dutch 18 Mar 86 p 5] 25031

SIEMENS COMPUTERS TO CHINA--The People's Republic of China has ordered over DM 50 million worth of computer systems from Siemens. The systems are destined for 18 Chinese universities and are to be used primarily for teaching and research purposes in the fields of electrical engineering and machine construction, aboveground and underground construction, surveying, and geology. In addition, there are plans to purchase 36 personal computers and four laser printers to input and output around 7000 different Chinese characters. The contract also covers the training of over 70 Chinese skilled workers. According to statements by the authority awarding the contract, this is the largest EDP contract so far for the People's Republic of China. The award was preceded by international bidding in which companies in the U.S., Japan and Europe participated. [Text] [Duesseldorf HANDELSBLATT in German 23-24 May 86 p 27] 13114/9435

CSO: 3698/507

PROJECT 'ESPRIT 932' FOR AI IN ROBOTS

Milan L'INFORMATICA in Italian No 6/7, May 86 p 7

[Test] The first meeting of the project's researchers took place recently at Fiar in Milan. The project, whose name is "Knowledge Based Real-Time Supervision in CIM," is devoted to developing basic and applied research for the planning, development, and application of artificial intelligence systems. These systems, called "white-collar robots," will be used in the automated factories of the future and their tasks will be to supervise the treatment of repetitive operations in production lines where the presence of the operator will be limted to controlling tasks.

The "white-collar robot" is therefore an example of the role of special computerized machines, called logic machines, that are able to create a symbolic representation of experience, called technical "know-how," to assist the production engineer in the efficient and correct execution of activities such as production planning, preventive maintenance, investigation and the repair of breakdowns and quality control. Project 932, scheduled to last 4 years is financed at 50 percent by EEC with a total cost of 15 million Ecus (around 23 billion lire), and it is one of the major Esprit projects devoted to CIM.

The 13 research organizations involved in the project, including companies, universities and research institutes, represent France, Germany, Italy and the United Kingdom. The Italian participation consists of Ars company of the Eni group, Fiar, Pirelli and Sisav, together with the polytechnic of Milan.

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WEST EUROPE/MICROELECTRONICS

SIEMENS INVESTS DM 200 MILLION IN PLANT TO DEVELOP BIPOLAR CHIPS

Duesseldorf HANDELSBLATT in German 25-26 Apr 86 p 24

[Article: "Siemens AG / Roofing Ceremony for New Technology Building. DM 200 Million Invested"]

[Text] Beginning in 1987, the components division of Siemens AG, Munich, will be located at the St. Martin-Strasse/Balanstrasse site in eastern Munich, where it will be concentrating on specific developments in microchip technology.

An ultramodern research facility for work on fast bipolar chips, known as ECL gate arrays, which are to be used primarily in data processing and communications technology, is being set up in a new technology building. At the roofing ceremony, Dr Kurt Garbrecht, head of the integrated circuit department at the plant, stated that Siemens is one of the leading producers worldwide of these basic building blocks, which can perform up to 2 billion switching operations per second. The building will also include a center for mask processing for the manufacture of chips at Siemens' Munich, Regensburg and Villach facilities. Siemens is investing over DM 200 million to construct and equip this building. The integrated circuits plant is currently seeking 400 employees for the Munich-Balanstrasse location, only 340 of whom will be engineers, and there will be an additional 100 commercial employees.

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CSO: 3698/502

BRIEFS

EEC TO REVIEW 'ESPRIT' PROJECT--Dr. Luciano Leproni has been designated as a technical expert by the EEC to carry out the revision of the 'ESPRIT' Project No 97 entitled: "Advanced Techniques for Algorithm Synthesis, Architecture and Design of Masks Used in the Making of Integrated Circuits for Digital Signal Processing" ("DSP Custom"). The project, coordinated by Professor De Man of Louvain's IMEC, is strengthened by the collaboration of Philips, Siemens, Bell Telephone MFG Co., Silvar Lisco, and Bochum Ruhr University, and has reached the end of the first stage. Dr. Luciano Leproni's final conclusion will help the EEC to decide on the advisability of extending financing to the second stage of the above-mentioned project. [Text] [Milan MEDIA DUEMILA in Italian No 5, May 86 p 128] 8615

ITALIANS DESIGN NEW FILTER CIRCUIT--CSELT researchers in the integrated circuits (IC) section of the department of research support have produced a methodology for designing analog integrated circuits capable of executing very complex filter functions. The methodology, named ARPA (Active Resistor Programmable Array), has been tried in a practical application; namely, a band-pass filter of the eighth order. The first samples in bipolar technology at 20 V SGS were tested successfully. [Text] [Milan Media DUEMILA in Italian No 5, May 86 p 128] 8615

CSO: 5500/M187

WEST EUROPE/TECHNOLOGY TRANSFER

ITALCOM, YUGOSLAV FIRM FORM DIGITAL SWITCHING COMPANY

Milan AUTOMAZIONE E STRUMENTAZIONE in Italian No 5, May 86 pp 99-100

[Article: "Official Presentation of the Italian- Yugoslav Joint Venture `Ei Digitel'"]

[Text] A new company, Ei Digitel, has arisen from a joint venture between Italcom, a corporation whose major shareholder is represented by Italtel (Iri-Stet group), which GTE and Telettra share in, and Elektronska Industrija Nis, one of the main Yugoslav industrial groups in the electronics sector. Ei Digitel will produce and sell in Yugoslavia public numerical switching stations of the Italian national system.

The agreement, which details procedures and development times for the new corporation, has been signed by Marisa Bellisario, Italtel's managing director; Sergio Treves, president and managing director of GTE Telecomunicazioni; and Ljubisa Igic, president of the Elektronska Industrija group.

The system, based on a distributed control architecture which is regarded at the moment as one of the most innovative, is operated in Italy by over 150 stations and is planned for the evolution to ISDN (Integrated Services Digital Network).

Italcom, with a 35 percent share in the joint venture, will supply licenses and production means for the construction of the stations; Elektronska Industrija will make available local infrastructures and equipment as well as the floating capital for the business start. The research activity for adapting the communications systems to the Yugoslav market will be carried out jointly by

Italcom and Elektronska Industrija. Investments of about $12 million are expected for the production in Yugoslavia of the Italian numerical switching system.

The Yugoslav market is of great importance for the Italian telecommunication industry, considering the close relations between the two countries.

At the end of the 5-year period 1986-90 Ei Digitel is expected to be in a position to acquire 40 percent of the public numerical switching sector (this share corresponds to a mean annual volume of 100,000 lines) in Yugoslavia.

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CSO: 3698/M167

WEST EUROPE/TECHNOLOGY TRANSFER

NEW SWEDISH EXPORT CONTROLS FOR CIVIL HIGH TECH

Stockholm NY TEKNIK in Swedish 12 Jun 86 p 10

[Article by Mikael Holmstrom]

[Text] The new Swedish export controls over civil high tech favor exports to NATO countries such as Denmark and Norway.

Exports to neutral countries such as Finland or to the Eastern countries, on the other hand, will be controlled more closely.

At the last minute, the government stepped in and tightened controls. The Customs Office was forced to change export regulations it had already printed.

Not a single country was mentioned by name on 27 February this year when the government decided to introduce Swedish export controls.

Now that the controls are in place, however, it may be seen that our closest neighbors are treated differently.

The reason for the controls is that it is a crime to export certain articles from Sweden. The applicable criteria are that the goods are from other countries, they are under export controls in the manufacturing country, and they are included on the government's blacklist of 20 May this year.

Simply stated, since 1 June it has been a crime against Swedish smuggling laws to break the export regulations of other countries. This applies primarily to the export regulations of the United States and those applied by United States allies in Cocom. Cocom consists of Japan and the NATO countries (except Iceland) and their export controls are directed against the Soviet Union and the Eastern bloc.

When the government decided to introduce the controls, it pointed not to the Cocom countries, but to "other neutral countries," which had introduced export controls. This had increased the risk that Sweden could become a transit country.

It was the Customs Office that was given the task of combatting the "unhealthy traffic" of the technology smugglers. But the new controls were not intended to become a bureaucracy that would disturb the "serious trade in advanced technology."

Problem

In order not to drown the export industry and itself in paper, the General Customs Board in Stockholm decided that much of the exports could be examined by the 44 local customs agencies in Sweden.

But there was a problem.

Of the 16 Cocom countries, only the United States and West Germany had indicated their position on goods that were reexported from Sweden. The other 14 Cocom countries refused to take a position on the reexporting of equipment already in Sweden (the reason is that they believe they do not have the right to determine what happens on other countries' territory). Thus, in all these cases the Customs Office itself must determine what a Cocom country would have decided, had it known from the beginning that a particular item would be reexported.

Local Approval

The Customs Office believed that, in cases such as this, exports to Western countries could be approved locally. Only exports to the East and to the Third World would have to be approved in Stockholm. Thus, a directive to this effect was issued on 16 May. In the very back, there was a list of 23 Western countries. Customs officers had the right to approve exports to these countries.

But this list was only a few days old when a "change" was made: seven countries were crossed off the list.

The altered list is an extremely sensitive topic that no one at the Customs Office wanted to discuss openly. Several sources have told NY TEKNIK that the changes were made by the government.

A common feature of the seven countries is that they do not belong to Cocom (see list below!). In case of doubt, exports to these seven countries will be determined in Stockholm.

It is important to know how a country is categorized in the control regulations. The United States has gone furthest by categorizing the entire world--various administrative procedures are used to establish various degrees of control and it takes different amounts of time for exports to be approved.

"The fact that the General Customs Board decides on certain cases does not necessarily mean that the outcome will be different."

"Exports to Finland, Switzerland, or some other country could get the green light, but there may be closer scrutiny in these cases," said Sigvard Falkenland, chief of the Central Customs Police.

Finland Enemy Country?

The special treatment of the Finnish export market was questioned by several companies during a seminar at the Stockholm Chamber of Commerce last week.

"Does this mean that Finland is treated as an enemy country in some way? Why can local customs authorities make a decision on exports to Denmark and Norway, but not to Finland?"

"The classification of countries was not done by the Customs Office, but by the government. I cannot answer that question," Bjorn Eriksson, director general of the Customs Office, said curtly.

The steps taken by the government in changing the list are even more remarkable, since neutral Finland, Switzerland, and Austria have stricter export controls than Sweden itself has. In addition, this division into Cocom countries and non-Cocom countries clashes with other Swedish efforts with regard to Nordic and EFTA cooperation, for example.

Nothing Unusual

Undersecretary Jorgen Holgersson of the Foreign Ministry's Trade Section told NY TEKNIK that the steps taken by the government were nothing unusual. It often happens that papers are changed at the last minute before they are distributed.

Does this regulation mean that the Cocom countries are favored administratively?

"No detailed evaluation is needed when goods are sent from one country to another within the same system. This is primarily a procedural question."

It seems, however, that if a reduction in bureaucracy were the goal, then the same regulations should apply to Finland, for example.

"Yes, but that country's system does not conform to that of Norway. That system should be allowed to keep tabs on its own exports, but if the exports go somewhere else, then this argument does not apply," Jorgen Holgersson said.

Difficult To Evaluate

The new export controls are difficult to evaluate, but a company can avoid reporting every export transaction by seeking a dispensation (see table).

Such dispensations have already been granted to about 10 companies. Those that comply with the demands of the United States for internal control programs can count on obtaining a dispensation.

Here, too, there are different categories. For exports to Cocom no permit is required from another Cocom country, but anyone exporting to other countries must have an export permit from the Cocom country in which the goods were manufactured.

AN AMERICAN COMPUTER IS EXPORTED FROM SWEDEN	RECIPIENT COUNTRY	CUSTOMS REQUIRE	EXPORT APPROVED BY
The exporting Swedish company	Finland and other Western countries outside Cocom, communist countries and others	Application 1 week prior; Permit from United States required. If no US permit	Local customs authority General Customs Board
	Norway or other Cocom country	Application 1 week prior; Permit from US probably not required	Local customs authority
Exporting Swedish company now has dispensation and a registration number from the General Customs Board	Finland and other Western countries outside Cocom, communist countries, and others	Swedish registration number; Permit from US required	Local customs authority
	Norway or other Cocom country	Swedish registration number; No US permit required	Local customs authority

This is how the Swedish export controls function in practice when a computer from the United States is to be shipped from Sweden. In certain cases, exports to Finland are treated differently than exports to Norway.

Countries to which Paragraph 1 of the General Customs Board Proclamation applies:

~~Australia~~	~~170~~	~~AU~~
Belgium	15	BE
Denmark	3	DK
~~Finland~~	~~6~~	~~FI~~
France	20	FR
Greece	33	GR
~~Ireland~~	~~19~~	~~IE~~
~~Iceland~~	~~5~~	~~IS~~
Italy	24	IT
Japan	109	JP
Canada	120	CA
Luxemburg	15	LU
Netherlands	14	NL
Norway	2	NO
~~New Zealand~~	~~171~~	~~NZ~~
Portugal	22	PT
~~Switzerland~~	~~25~~	~~CH~~
Spain	21	ES
Great Britain	17	GB
Turkey	32	TR
United States	121	US
West Germany	9	DE
~~Austria~~	~~26~~	~~AS~~

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Japan	109	JP
Canada	120	CA
Luxemburg	15	LU
Netherlands	14	NL
Norway	2	NO
Portugal	22	PT
Spain	21	ES
Great Britain	17	GB
Turkey	32	TR
United States	121	US
Federal Republic of Germany (West Germany)	9	DE

The government crossed off seven countries from the list already printed for the Customs Office. Only the United States and its allies within Cocom remained--including Norway and Denmark. For certain exports to countries that have been crossed off, such as neutral Finland, Switzerland, and Austria--the change means stricter controls by the Customs Office.

PHOTO CAPTION

1. p 10. Customs officer Sven Ohlsson from the Export Control Group on Electronics of the Customs Office.

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CSO: 3698/510

WEST EUROPE/SCIENTIFIC AND INDUSTRIAL POLICY

NEW PHILIPS PRESIDENT ON FUTURE STRATEGY

Groot-Bijgaarden DE STANDAARD in Dutch 22 Apr 86 p 17

[Interview with new Philips President C.J. van der Klugt by editor Peter Cuypers; date and place not given: "Throw the Strength of Nine Multinationals like a Spear into the Market"; first three paragraphs are DE STANDAARD introduction]

[Excerpts] The general meeting of Philips yesterday appointed Cor J. van der Klugt (Haarlem, 1925) president of the company and successor to Dr Wisse Dekker. Dr Dekker, who was the head of Philips for a good 4 years, was appointed chairman of the supervisory board succeeding H.A.C. van Riemsdijk, who has reached the age limit.

Van der Klugt joined Philips in 1950. After having held various functions in Eindhoven, he became director of Philips Uruguay in 1963. He became sales director of Philips Brazil in early 1968 and managing director in early 1971.

Van der Klugt has been a member of Philips board of directors since July 1978. On 1 January 1982 he was appointed vice president and vice chairman of the board of directors.

"Philips is actually a very versatile company. We have nine divisions, each of them as complex as General Motors. With a 10-billion guilder turnover, for example, the lighting division alone is already a large multinational. And that is only one of the nine. We also have national organizations in more than 60 countries. Consequently, it is not easy to describe the essence of Philips' activities in a nutshell.

"I think what it all boils down to is that we are trying to remain one of the leading electric and electronics companies by following a strategy of enormous R&D investments. We have to turn a federation of locally-based companies into a single spear aimed at the market, starting with product manufacturing and ending with the national sales organizations which are responsible for customer contact and for which the Japanese envy us. We intend to remain one of the world leaders at all costs, particularly since I believe that Philips more potential than other in the world," says Cor J. van der Klugt in an exclusive interview with our editor. Yesterday, van der Klugt was appointed Dr Wisse Dekker's successor as president of Philips.

DE STANDAARD [DS]: As Philips president you succeed Dr Dekker who became especially known for his pro-European pleading. Do you intend to follow the same course?

Van der Klugt [VDK]: What Dr Dekker advocated in previous years was based on a consensus within the board of directors. So you can be sure that we will certainly follow the same course, although perhaps not the same way. Eventual shifts in emphasis will have to do with the fact that a thing or two has happened since Dr Dekker and the Philips board of directors began advocating a European approach some 5 years ago. Our goal remains to ensure that by 1991-92 Europe will have become a full-fledged competitor of the United States and Japan.

DS: What are in your opinion the most important new elements of the last 5 years?

VDK: In the first place the fact that most people are now convinced that it is in the European interest that the Community become a real community, especially in economic terms. Secondly, because of this awareness, for which Mr Davignon had paved the way, politicians in the Community are now also willing to cooperate towards the goal.

Technology

DS: How do you now judge the technological relationship between Europe and its competition?

VDK: I would like to emphasize, even though I am perhaps simplifying matters, that until the Second World War all basic concepts in electronics originated in Europe. After the Second World War, the United States made a very important contribution to the field of solid-state technology, which resulted in, among other things, the transistor and the integrated circuit. So far, Japan has not made any important contributions in the field of basic concepts--the Japanese have contributed in other important ways--but in that respect Europe has not lagged behind. Certainly not with regard to potential, nor concerning university training facilities, and definitely not in the field of R&D.

I believe, however, that Europe is in danger of falling behind if it does not succeed in linking this potential to an industrial infrastructure which still exists. That is one of Philips' major messages, which was also expressed by Dr Dekker: If Europe neglects the basic technologies (physics, electronics, chemistry,...), the demand for that knowledge as well as the community's pressure on universities to offer these courses will decrease. Europe will then become a backwater. The United States is faced by the same threat. Since the Second World War, the United States has allowed a great many disciplines to move to Southeast Asia. Inspired by a short-sighted policy they bought cheap electric, electronic, and other products in Japan, and as a result they now no longer possess the know-how to manufacture ultra-modern audioproducts. Sometimes I jokingly say that thee is no American engineer left who knows how to build a shortwave radio.

We have warned Europe against a similar evolution, if it does not succeed in establishing a large, uniform market supported by an industrial policy. This message has produced a number of reactions as appears, among other things, from the EC Commission's white paper on the internal market, which should be a reality by 1992. We are moving forward, but the strides whould be longer and the pace hastened.

DS: That implies greater inter-European cooperation....

VDK: First of all, there is a need for common norms and standards. The stereotype example is that of the carphone: There is one system in the Netherlands, another in Belgium, another one in the FRG, and yet another in Denmark.... These are simple, but very large obstacles. You will find at least nine tiny, horrid, complicated trademarks on a Philishave-razor.... In order to sell a product that has been worldfamous for its quality for more than 50 years, we have to pass through nine quality checks, and it is the consumer who has to pay. That is downright expensive. And we have to earn that money back through the price of our products. Why can one quality check not suffice for the whole of Europe? Besides the norms there are the standards: In Bruges we make 600 different types of television sets. That is an embarrassingly high number, but we must because of all the possible variants needed in various countries.

Secondly, there is the abolition of bureaucracy. To transport a load of goods from one side of Europe to the other, a truck driver sometimes has to submit more than 100 forms. If there was only one standard in Europe, like in the United States, and no internal bureaucracy, Philips consumer electronics products would be at least 10 percent cheaper. This double obstacle costs the public extra, and there is no real excuse.

Finally, a third aspect concerns the advantages of scale. Factories in the United States and Japan can immediately produce much larger quantities, also because in Japan and the United States the same norms apply to television, electricity, and electronics. That is why the Japanese grew faster in the United States than we did. But if you consider that today there are already more inhabitants in Europe than in the United states, and that europe also has a long tradition as well as a large potential, then there is no real reason why we should be outdone by the Americans and the Japanese.

Investments

DS: Do you think that this scaling up can be realized through cooperation between European companies?

VDK: Yes, but it should be directed towards the future. In electronics we have to prepare ourselves for very substantial investments. A market such as the American one makes it possible to earn those investments back, but if you look at public telephone services in Europe, for example, you still see the problem of national champions who all have to be supported by the national PTT's [Post, Telephone, and Telegraph]. As a result, the European te**lep**hone user has fewer possibilities than the American one, while having to dip deeper into his pockets.

That is why we advocate cooperation. It should be possible to unite Europe's forces in the preindustrial stage, i.e., at the R&D level. The Americans have been doing that for many years in their space programs and their defense expenditures, the Japanese pour large sums into a fund for a development project in which all companies participate.

DS: As far as public telephone services are concerned, cooperation is trans-atlantic rather than inter-European: Philips-AT&T, Siemens-GTE,....

VDK: Yes, not out of preference, but out of necessity. Initially, we tried to find a European partner, but without success because of the long distances in Europe, the lack of common legislation, the impossibility to establish collective social security regulations for our personnel, etc. It was too early then, let us hope it is not too late now.

DS: Philips has ambitious aims for 1991, when it celebrates its centennial: a 90-billion guilder turnover and a net profit of 3 percent to 4 percent. Do you think that the required growth rates can be realized?

VDK: Considering the Philips' figures over the last decade and assuming that the world develops normally, these goals should be attainable. I would not be surprised if we set our goals even higher. We are not exclusively trying to increase our turnover, mind you. But we are looking for a significant improvement in our profitability, and we also expect to achieve it. In the past few years, restructuring has imposed heavy sacrifices on us, but it has strengthened our position in consumer electronics and in the components sector. Furthermore, we can count on loyal profit makers such as the lighting division, the household and personal care appliances division, and the professional systems and products division: They have always yielded very sound profits and we expect this to continue.

DS: Should growth, geographically speaking, mainly come from the United States?

VDK: Philips has been active all over the world ever since 1893. Our strategy is to be strong in places where our competitors are strong, and that is notably in the United States, which accounts for at least 50 percent of the electronics world market. We assume that in a number of branches, more particularly in consumer electronics, and professional products and systems, we will continue to grow strongly in the United States and in the Far East. And then I am not thinking of Japan primarily, but rather of the rest of the Far East.

Priorities

DS: And the future of the European market?

VDK: The European market is more of a problem for us, because the Europeans have other spending priorities. They prefer to go on holiday, for example, while in Japan and the United States the purchase of electronic products, cars, and household appliances features high on the list of priorities.

Thus the European color television market did not grow last year, while in the United States a growth of 6 percent to 7 percent was still recorded.

Growth in Europe should come on the one hand from the overall economic growth in Japan and the United States, and on the other hand from new products in consumer electronics, telecommunications, and other professional areas. We believe that the next great battle will be fought over compact disks: First in the audio sector, then in the video sector and then in the interactive field, i.e., all the equipment surrounding a screen. Within 5 or 6 years the world market for these products will amount to an estimated 40 billion guilders, half of which will come from the United States. We are preparing ourselves by working on world standards and by launching products such as the MSX computer, which can be used to study, keep records, play games, etc. In the United States we are having great success with Videowriter, a sort of electronic typewriter which contains an American dictionary stored on a memory chip so that the user does not make spelling mistakes.

The next generation of interactive products in consumer electronics, both for Philips and for other companies, will be based on the compact disk, with the present music disk being used as a gigantic computer disk on which contents of a complete encyclopedia can be stored. New generations will have to get used to the idea that a small silver-colored disk contains as much information as s cubic meter of paper.

The great challenge for our people consists in selling extremely complicated equipment to people who do not understand electronics, because otherwide there would be no mass market. It is a challenge to avoid the failure of the home computers: You can play games and do many other things with them, but everything can be done more easily in other ways. France's Minitel is an example of how it should be done. It is a small television set which can be connected to the French network and which can be used to look up any telephone number in France. This is an application which meets everyday needs, and the user does not have to know anything about electronics. At the moment you can even consult your bank accout with Minitel; at last the user gets an answer to the question: What can I do with all those things?

Similar developments will take place in kitchen appliances, for example, with certain functions being controlled electronically. We only have to make sure that everybody knows how to use the equipment. The television picture will also be improved in the near future, and within a year satellites will also be improved in the near future, and within a year satellites will probably enable you to choose between 20 television channels: In short, I am sure that there will be enough opportunities in electronics to increase the turnover.

Production

DS: There are enough possibilities on the market, but what about production? Do you see any shifts there in the near future, between the continents, for example?

VDK: What Philips is producing in Southeast Asia today, for example, does not take away any work from Europe. If we had not built those factories it would not have had any consequences for employment in Europe because it is no longer possible to manufacture the products involved on a competitive basis in Europe. On the other hand we are now restructuring and reorganizing production. There are two reasons for this: The first is to produce quantities that make advantages of scale possible, the second and actually concurrent reason is to make products of ever higher quality.

Formerly, Philips was a federation of organizations which used the think tank in Eindhoven and produced and sold in another country. Those days are over. We manufacture a lot more in Belgium, for example, than we actually sell on the Belgian market, and at the same time we import other things. Just before the European Community came into being, we had nine cathode ray tube factories in Belgium. If we were to start all over again now, we would probably start with only one such factory. And that would then match the scale on which our competitiors in the Far East produce. The definition of scale is very simple: the size of our largest competitor.

Thus, the number of cathode ray tube factories had to be reduced, but that resulted in enormous tensions. So we turned to the European Community asking it to give us--as well as other European producers--3 years to restructure, and at the same time to thwart dumping by competitors. We have succeeded: Today we only have five factories. Maybe we can keep these, maybe we will have to reduce the number still further, but at any rate we will be able to do it all by ourselves. And we claim that the public will not have to pay a higher price. This philosophy also underlies the protection of compact disks in Europe.

You have to see the shift in production lines against the same background. First of all, some products often have to be manufactured in a particular place because they cannot be manufactured elsewhere. Second, the world has changed so much that the entire world has not become our field of operation, and we have to match our main competitors. Philips' strength is that we already had to come into the open a long time ago: Less than 8 percent of our turnover is produced in the Netherlands. Long communications lines, transfer of know-how and codirecting from a distance: I wager that no one else in the world can equal Philips in that respect.

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WEST EUROPE/SCIENTIFIC AND INDUSTRIAL POLICY

DENMARK: 1.4 BILLION FOR 5-YEAR HIGH TECH PROGRAM

Stockholm NY TEKNIK in Swedish 12 Jun 86 p 8

[Article by Staffan Dahllof]

[Text] Copenhagen--Technology and research in Denmark will be promoted by a government injection of 1.4 billion Danish kroner. Just over one third, 500 million, will be invested in a "green revolution"--new biotechnology.

The government's new research and technology program will run for 5 years. It includes appropriations for new biotechnology research centers, money for equipment and stipends, and increased state support for companies that are cooperating on technological projects.

Biotechnology will have a prominent position, but will not be as favored as many had thought. Earlier proposals for 2 to 3 billion kroner for biotechnology programs alone have been reduced considerably. Education Minister Bertil Haarder maintains that the universities do not have the capacity to receive more than the 500 million that has been allocated.

Money To Eureka

One fundamentally new aspect is that the government will give 100 million Danish kroner to the Eureka Program. Sweden and most other participants in the Eureka Program have maintained that this cooperative European program in technology should be funded by the participating companies, without direct state assistance.

Denmark's troublesome trade pattern is behind the new technology and research program. Exports are characterized by "low-technology" goods, while imports are technology-intensive. Denmark has failed to increase its exports, despite restrain in wage increases and significant reductions in interest rates.

Now the engineers and researchers will lead the country out of the crisis, the government hopes.

Business and the political opposition agree with this goal, but believe that the appropriations are too low.

The enzyme and pharmaceutical manufacturer Novo, a leader in Danish industry, invests twice as much money in its own research and development as the government wants to spend for the entire country.

A basic Danish weakness is the inability of many small companies to utilize the advanced technology that is already available.

Lack Of Interest

Recently, a meeting held to introduce the EC technology program Brite, which is designed for small manufacturing firms, attracted 14 participants. Earlier this year a conference on computer-assisted design and manufacture (CAD/CAM) in Copenhagen had to be canceled due to a lack of interest.

As a result, it may be some time before the billion invested by the government is converted into increased and more technologically advanced exports.

On the other hand, the nonsocialist government has broken with the traditional Danish approach of leaving industrial policy to the industry.

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CSO: 3698/510

WEST EUROPE/SCIENTIFIC AND INDUSTRIAL POLICY

ITALIAN TECHNOLOGY PARKS, CITADEL OF FUTURE

Milan ESPANSIONE in Italian May 86 pp 54-61

[Article: "Who Can Benefit From The Technocities"]

[Excerpts] All leading indicators [R&D allocations, patents, employment in the robotics sector, concentration of power lasers, and so on] point to the fact that Turin and Piedmont qualify as areas with a high concentration of high technology. The idea of the Agnelli Foundation was to give a name to all this, a striking name which would play on the idea of tomorrow's world right here in our backyard, and on the mythical areas of America which represent the cradle of the new technologies. In this way, Tecnocity came into existence, creating a new trademark with an ambitious task--that of making people forget about Turin and its past.

In reality, though, Tecnocity should not be restricted just to the capital of the region of Piedmont. The area defined by the Agnelli Foundation includes Ivrea and Novara [i.e., Olivetti and the Donegani Institute, where the greater part of Montedison research work is carried out]. Together with Turin, these two cities represent the "triangle of innovation." Actually, however, things are a little different. The entire operation clearly bears the Fiat signature. The original idea came from the Agnelli Foundation, and Marcello Pacini, its director, is now president of the Association for Tecnocity. In the original plan, Novara existed only on paper, but now this city doesn't even play that role, since the foundation recently has been discussing the possibility of forming an ellipse, with Turin and Ivrea as the focal points. Even in Ivrea, however, people seem to be keeping a low profile. "We may belong to the association, but basically we're only guests" is what you hear at the Olivetti headquarters. The impression you receive is that this informatics company wants to risk as little as possible in this hand which has been dealt by Turin, and it wants to make sure that there is no sector in which it appears as a mere satellite in the Fiat galaxy, particularly the new technology sectors where the company's recently-established laboratories in Silicon Valley are playing on home territory.

The objective behind this general mobilization of all the "holy places" of Piedmontese business [a mobilization which has had varying degrees of success] is to rationalize the positive aspects of business activity and to come to terms with the historical shortcomings of the economy of the region [the

Association for Tecnocity includes the Fiat holding company, Olivetti, the Industrial Association of Turin, Federpiemonte and the Guido Donegani Institute, as well as SIP, STET, IMI, ENEA, BNL and San Paolo di Torino]. These shortcomings include an inefficient and inadequate transport network, the fact that Turin's Caselle airport is not included on numerous international routes and clearly does not come up to world standards, and the lack of any direct link between Turin and the most important airport, Milan's Malpensa airport. And the list doesn't stop there--we could carry on with it for some time, throwing doubt on whether or not this area is really efficient. Because of all this, the Piedmontese business world has every interest in making sure that the discovery of Tecnocity is successful, and that it attracts public works and new human resources in the technical and scientific spheres.

In order to prove that there are marks of excellence at an international level under this exterior, an ambitious program is being launched. In addition to the fashion and publishing activities of Milan, doesn't this city also have a stock exchange which has exponential growth and is difficult to equal in terms of trading volume? Fine, well Turin is now aiming to create a technological stock exchange. There is only one example of an initiative of this kind in the entire world--Technomart, established a few months ago by the top 20 companies in Japan. What this essentially consists of is a computerized system for buyers and sellers of patents and, above all, of know-how. What we have here is not simply a data bank, but a proper tool of technological brokerage--a kind of electronic catalog listing basic information on new processes, the length of time which these processes are available and the relative prices.

The United States has not yet launched an initiative of this kind--and you can bet your bottom dollar that the people behind Tecnocity would be only too happy to beat the Americans to draw. Ever so quietly, the Turin of tomorrow is taking its place between the two colossi of innovation, the United States and Japan. It's difficult to say yet just what the results will be. Responsibility for the program has been entrusted to the Nomisma research center in Bologna. This organization is keeping a tight check on its activity and isn't allowing any news to leak out. How much use will it be? Here again, it's difficult to say. This is obviously an initiative which forms part of the program of rationalization of an area which is changing complexion. There will be one sure advantage to the program, though. This is that it will avoid paradoxical situation such as those in which companies dedicate all their energies to studying new systems for months on end--only to discover at the end of this time that the system already exists. Experts assure us that this sort of thing happens only too frequently.

The Bicocca Program--Milan Changes Tires

Goodbye to Pirelli tires. The days of the old sheds of the Bicocca, grouped together in an area about 6 kilometers away from Milan's Piazza Duomo, are numbered. The company's tire production is to be transferred to a highly-automated factory at Bollate, on the outskirts of the city. And what is to become of the Bicocca, this miniature "city within a city" covering an area

of 700,000 square meters? The problem is nothing new. It's only another instance of the phenomenon that urban planners and town planning engineers refer to as the renewal of abandoned industrial areas, chasms which are opening up all over Milan. But things aren't quite that simple for Pirelli.

A single property deal to create the financing needed for the transfer of the plant would have been an unrealistic project because of the lack of flexibility of the area. It would also have involved enormous bureaucratic difficulties as well as problems of company image and industrial relations. A more realistic solution was therefore arrived at--to emphasize the strong points of this little "citadel" in order to attract the cutting edge of the advanced service sector of the Milanese business world, retaining in the Bicocca those business sectors of this multinational rubber manufacturer with the highest added value. If the program is finalized, Leopoldo Pirelli will have pulled off the deal of the century--that of transforming a technologically obsolete area into an avant-garde environment, and of achieving this transformation through a high-prestige operation in both financial and cultural terms. The preliminary project drawn up by Pirelli in a letter of agreement with the Borough authorities, together with the provincial and regional authorities, speaks for itself. The Bicocca is to become the natural setting for public and private research centers and laboratories, for high-tech industrial activity, as well as providing a focal point for informatics and telematics for which it will become one of the first teleports in Italy. And Pirelli--what will it leave in its wake? The program establishes that Pirelli Informatics S.p.A. [the informatics company of the group] will remain in Bicocca, together with all the research laboratories, the head offices of the Italian companies in the group and the manufacturing facilities of the cables division. These are the main lines of the Pirelli program. However, as this is a program involving radical intervention, razing to the ground hundreds of thousands of cubic meters of buildings and the redesign of the whole area, Pirelli decided to organize a prestigious competition between 20 of the most famous architects in the world. At the end of February, these architects submitted their preliminary projects on the basis of the instructions received.

The jury of the competition is an impressive one [chaired by Leopoldo Pirelli and including the head of the research department of the Banca Commerciale Italiana, Mario Monti; the general secretary of Censis [Socio-economic Studies Center], Giuseppe De Rita; the mayor of Milan, Carlo Tognoli; the presidents of the regional and provincial councils and a number of highly-renowned university lecturers]. The jury chose three winning proposals, whose architects will go on to prepare the final project. The choice created a certain amount of discussion, and even accusations of rather questionable dealings.

The construction of the Electronic Management Center on the former Pirelli premises, however, is anything but final. There appears to be an infinite number of barriers to be overcome--the first and foremost of these being the modifications it would require to the master plan for the city of Milan, a political decision over which the group has no direct control. The letter of agreement signed with Mayor Tognoli and a certain number of the outgoing

officials of the city council is of little value because it has not been approved either by the city council or by the various political parties in the city council.

The first objection to the Bicocca project was raised at a meeting of the Borough council by the socialist member Michele Achilli. During the debate on town planning, Mr Achilli defined "the support of the outgoing city council for the Pirelli project" as "a pipe dream." And political problems are not the only obstacles which have to be overcome. Other difficulties may arise as a result of the fact that the entire area bears the Pirelli stamp. Many people are wondering which companies would be willing to transfer their most prestigious divisions to the Bicocca. And they support this with an interesting precedent--the sale of the Pirelli skyscraper to the Lombardy regional authorities. This event represented the first major "divorce" between this multinational and architectural symbol in the heart of Milan. The skyscraper made a lot of people's mouths water, and would have given a guaranteed status to whoever had bought it--but it ultimately became the headquarters of the regional authorities. A question of image--the experts say--whatever company took over the skyscraper, it would have always remained the "Pirellone" for both the Milanese and the world of business. Despite the numerous obstacles, however, Pirelli is serious about the program and is proceeding firmly toward its objectives. Even if it all turns out to be nothing more than a soap bubble, the company will still have achieved one objective--that of smoothly transferring the tire-production plant to new premises and without trauma or conflicts.

Computer City--The Myth Belies The Reality

In the area between Agrate and Vimercate, on the circular road east of Milan, there's a "little big triangle." Little because only a few kilometers separate the three angles of the triangle formed by three high tech companies. Big because these three companies are called IBM Italy, SGS Microelectronics and Telettra--or, in other words, the most innovative, stage-of-the-art products available in Italy today.

The fact that these three advanced, high-tech companies are situated so close together has given the area of Vimercate a prestigious image-- and this has obviously led to comparisons such as "the Japan of Italy" and others in the same vein. Nonetheless, if we look at the facts, we can see that the attitude of the local manufacturing sector to this type of business is one of total indifference--so much so, in fact, that these three companies, which were established in the area as far back as the fifties and sixties, assume the appearance of three monoliths set down in the midst of a hive of different activities--essentially furniture and fabrics--typical of the Brianza area. In the area of Vimercate, there are 389 companies employing a total of 30,000 people, a European record in terms of industrialization.

However, only 17 of these companies belong to the informatics and electronics sectors; moreover, of the 8,500 people employed in these two sectors, 8,200 are employees of the three largest companies already mentioned. Secondary

activity--at least at an industrial level--is practically non-existent, whereas the service sector has witnessed the worldwide boom of software houses specializing in the production of software packages.

Modernization in Brianza is going at a fast clip, but only in the mature sectors. Electronics and informatics have extremely high rates of penetration in the traditional companies--and this explains the boom in the service sector. Contrary to other areas of Italy, entrepreneurship and the desire to undertake new initiatives are moving in different directions, compatible with the historical development of this area. So who's benefitting from the myth of the Silicon Triangle? No one at all. So much so, in fact, that in the last few months we have seen the beginnings of the "villetta" phenomenon [tiny apartment buildings in the cellars of which owner-entrepreneurs have installed highly sophisticated control systems capable of supplying companies with a level of quality that even the most demanding customers--IBM, for example, would find interesting]. Despite this fact, certain local bodies, with the collaboration of the three major companies, have launched a "program for electronics awareness" in the area, since it appears that, with a very few rare exceptions, electronics continues to aim for the "mature" sectors.

Research Field: Trieste--A Union Of The Scientific And Industrial Spheres?

The official name goes on forever and reeks of bureaucracy [Consortium for the creation, management and development of the area for scientific and technological research in the province of Trieste]. The intention behind the program, however, is for a streamlined, efficient project. After years of procrastination, the project for a technological park in the Venezia-Friuli region, commonly known as the research area, was approved by a law passed by the government in January 1986. The authority set up to oversee operations [formed by the National Research Council, the universities of Udine and Trieste, the Borough authorities, the provincial and regional authorities, as well as by the International Center for Theoretical Physics, directed by the Pakistani physicist, Abdus Salam, who received the Nobel Prize for his work at Trieste], has been granted a capital fund of 85 billion lire. It has also been granted authorization--and this is the most interesting new feature of the matter--to constitute a joint-stock company with private companies.

One of the main objectives of this technological park is to create innovation and new areas of business activity and entrepreneurship. But how can an area such as the hinterland of Trieste, an area which has traditionally been cut-off and depressed, hope to attract top brains and industrial investment? Well aware of the limits of the economic fabric of the area, the management of the research area is concentrating on two high-prestige institutions which are destined to form the launch-pad for the promotion of new activities. These are the International Center for Genetic Engineering and Biotechnology, and a particle accelerator which the experts have called a light synchrotron. This instrument represents a concrete evolution which resembles the industrial applications of the CERN ring in Geneva, where the physicist Carlo Rubbia carried out the research which earned him the Nobel Prize. And it is Rubbia himself who is the chairman of the scientific committee responsible for the

accelerator, the overall cost of which will be in the area of 150 billion lire. A mixed-capital company has been constituted for the construction of the light synchrotron, and it is hoped that this company will be only the first in a long series of initiatives in this "new wave" of activity in the area of Trieste. The company, called "Trieste Ricerche" [Trieste Research] (40 percent Research Area; 20 percent Friuli Regional Financing Company; 20 percent SPI, an IRI financing company set up to encourage the development of new business activities; and, finally, 10 percent by private investors) will also be responsible for handling the products created as a result of this research.

The financing of the operation is substantial. In addition to the 85 billion lire of the capital fund mentioned earlier, the regional authorities have allocated 40 billion lire to the program, and the Minister for Scientific Research Luigi Granelli, has promised that he will submit a program for providing 50 percent of the financing needed for the light synchrotron [an additional 75 billion lire] to the CIPE [International Committee for Economic Programming] as soon as possible. To this we must add the further 20 billion lire which have been allocated by FIO [Job Creation Investment Fund] for the center for Genetic Engineering and Biotechnology, which is to be created as part of this area.

Tiburtina Valley--Rome the Eternally Watchful City

Contraves Italiana, Elettronica, Elmer, SNIA BPD, Selenia-Elsag, as well as CITEC, SISTEL, Page Europa and Litton--these are the names of some of the most important companies in the defense and space sectors, who have their head offices in the province of Rome and who supply NASA [The American Space Agency] and who are taking an active part in European strategy programs such as the Ariane program or the program for the tactical fighter-bomber, the Tornado.

A closely-woven fabric of industrial activity has developed around this disturbing "center of belligerence"--an activity which in fact makes Rome the third city in Italy in terms of employment, topped only by Milan and Turin. But there are more surprises in store. According to a survey conducted by CENSIS [Center for Social Studies and Investment], after Lombardy, Lazio is the region which employs the largest number of people in informatics services in the whole of Italy. What's more, if we consider the ratio between the employment in informatics services and the total employment, the Lazio comes out on top of the list.

This mini-boom in informatics, software and systems electronics has come as a surprise, first and foremost, to those involved in the sector in the area of Rome. Unable to resist the temptation of baptizing this phenomenon with their own "trademark," they coined the term "Tiburtina Valley." However, quite apart from the fact that the area considered here is excessively limited [since this development extends as far as the valley of the Tiber river and the area of Pomezia], there are clearly-expressed doubts and reservations concerning the real extent of the phenomenon. If we exclude the large companies of the area which have an almost historical status [and many of which are partly state-owned], as well as the public bodies which program massive

R&D investments, then we see that the vast majority of the recently-established companies deserving the ambitious label of "valley" actually use very little high tech. A substantial percentage of these concerns are companies involved in the maintenance and repairing of office machinery and in data processing, as well as companies manufacturing component parts with a low innovative content. Some people maintain that a major role is played by a whole myriad of companies involved in data punching and recording; these companies operate on a precarious basis, relying on state-sector orders to survive.

Therefore, it's still early to say whether or not Rome has freed itself from the grip of bureaucracy and ministries. Why Tiburtina Valley, then? A case of mass blindness? Maybe. One thing is certain, though, and that is that the figures on the dynamic state of Roman industry have created massive enthusiasm --an enthusiasm that no one has dreamed of cooling down a little. On the contrary, it has been fueled time and again, to create an image which would place the Roman business community on an equal footing with the rest of Italy [and with the various industrial associations in Italy]. This has been carried to such a degree, in fact, that a group of young businessmen from the local Association of Private Businesses organized a visit to Silicon Valley--a place with which they felt they had a close affinity. On their return, however--or so the story goes in Rome--their comment of: "It's simply a different ball game" brought everybody firmly back to earth.

Tecnopolis--California Dreaming in Bari

Gianfranco Dioguardi, a university lecturer and building contractor, and a leading figure in the Bari business community, wrote in one of the leading national daily newspapers that, if Puglia aspires to the role of a second California, Tecnopolis will be its Silicon Valley. And he believes what he says. The first "informatics citadel" in Italy is located at Valenzano, 13 kilometers to the south of Bari. A real estate agency would describe it as a nucleus of ultra-modern buildings, constructed in an area of four hectares of ground owned by the University of Bari.

The program was organized by CSATA [Center for Studies and Applications of Advanced Technology], a consortium formed by the university and by local banks and companies which have been active in Bari since the late sixties. The first phase of the program was financed by the Cassa per il Mezzogiorno [Fund for the South of Italy], which allocated a figure in the region of 30 billion lire to the project. Ten billion lire of this was used for building and machinery costs, while another 12 billion was used for the electronic equipment housed there. Today, there are offices, research laboratories, libraries and data centers, conference rooms and training centers, all connected by a state-of-the-art communications network.

But what's the point of Tecnopolis? Those involved in the program obviously have to answer that it's a program designed to create new job opportunities in sectors with a high added value, as well as to help establish companies and develop entrepreneurship. A number of large companies such as Olivetti and IBM have already finalized agreements for specific programs [as part of

the Esprit program, for example, Olivetti, CSATA and other European companies are conducting research into automatic voice-recognition systems at Tecnopolis]. But there are still thousands of square meters of floor space available in those buildings which have already been completed, and the organizers behind the Tecnopolis venture are hoping that the large companies of northern Italy will decide to take these offices over. But it is this very lack of coordination between the futuristic nature of this complex and the absence of any real contacts with the advanced business sector which constitutes the most discordant note in the chorus of criticisms, disagreement and disapproval with which the Tecnopolis Venture was immediately greeted.

The sceptics put forward reservations concerning the decision-making process which led to the construction of Tecnopolis before any verification was conducted of the willingness to participate in the project of those very people who were supposed to make the program take off. The second most vociferous criticism concerns the fact that, in their haste to put up a showpiece of which they could boast, the organizers behind the initiative failed to take into account the fact that technology parks don't necessarily flourish in all surroundings; moreover, they omitted to consider the fact that the initial requirements are somewhat severe if that complex combination of factors which is the guarantee of success is to be achieved. And then there are people like Marcello Pacini, president of Turin's Tecnocity, who state in no uncertain terms that any area has to develop on the basis of its own abilities and that, in the South, it is the sectors of agriculture and tourism which should be modernized. From these clearly hostile opinions, and from the opinions of people who see certain possibilities in the program, the impression you receive is that, in any case, the whole operation has a slightly artificial flavor and, as usual, the image most often cited is that of the "cathedral in the desert."

Umberto Bozzo, Director of CSATA, admits that: "Our program is an ambitious and difficult one. Nonetheless, we mustn't make the mistake of judging it too hastily because we expect the results to appear overnight. Our objectives are long-term objectives--we'll discuss the matter again in 10 years time."

There can be no denying the fact that prestigious prgrams launched in the sixties [with the Tsukuba program at the top of the list] and which people rave about today, were programs which established themselves gradually, progressing step-by-step toward the levels of performance they have reached today. On the other hand, as the pessimists would maintain [and these pessimists are present in all areas of science and industry], the other programs we mentioned were created in wholly different contexts; they would also maintain that, in the case of Tecnopolis, we run the risk of seeing this complex become totally isolated as time goes by, or being forced to reschedule its objectives drastically. The temple of innovation runs the risk of becoming a center of professional training and refresher courses. This feeling is so strong that some people--only half jokingly--have even proposed a new name for the initiative--Schoolopolis.

At the end of this "journey" around the technological parks in Italy, you have the impression that the Italians got there just a bit too late, and that the bases on which they worked are open to dispute. If we look beyond the united appearance [there exists an international federation of technological parks, to which Tecnocity, Area and Tecnopolis all belong] we can see that the various initiatives are divided by a clear feeling of competition. The pocket providing the financing needed is always the same one, and not all the valleys always manage to obtain what they ask for. Fio, for example, recently granted 20 billion lire to the area in Trieste, but refused the application for a sum of 40 billion lire for the new N.R.C. premises at Milanofiori [as part of Tecnocity]. Unhappy about this decision, the Torinese referred to it in harsh terms in the magazine published by the Agnelli Foundation. What with the delays, jealousies, arguments and bluffs with which the matter is surrounded, the technological parks of Italy today present a depressing scenario.

8616/12795
CSO: 3698/M136

WEST EUROPE/SCIENTIFIC AND INDUSTRIAL POLICY

ITALIAN LAW ON INTERVENTION IN AERONAUTICAL SECTOR [resolution of April 15, 1986]

Rome GAZZETTA UFFICIALE DELLA REPUBBLICA in Italian 10 May 86 pp 17-18

[Text] In view of Law No 808 of 24 December 1985 which carries provisions for providing funds for the development and the enhancement of industrial competition in the field of aviation; in view of Article 4 of the above-mentioned law which requires CIPI [Interdepartmental Committee for the Coordination of Industrial Policy], as proposed by the Ministry of Industries, Commerce and Crafts, in coordination with the Department for Special Funds in the south, to determine directives for: the acceptability of benefit programs provided for by Article 3 of the law, the individuation of priorities for the same on the basis of objectives for technological development, consolidation and increased employment, development of the south and increased exportation, and finally, the criteria for the development of the preliminary investigation; in view of the resolution itself on 21 May 1981 which approved the finalized program for the aviation industry, according to ARticle 2 of Law No 675, dated August 12, 1977; in view of the proposal which the Minister of Industry, Commerce and Crafts has proposed together with the Minister for Special Funds in the south, for approval by this committee with note No 37449 dated 19 March 1986.

Resolution: The Ministry of Industry and Arts and Crafts must follow the directives for the application of Law No 808/1985 below:

1. Conditions of acceptability;

1.1 The law takes effect for the following activities with reference to participation of Italian firms in aviation programs in international cooperation;

a) Elaboration of programs, execution of research, design and development, realization of prototypes, tests (fatigue, aging etc.), investments for industrialization and production start-up until full manufacturing conditions are reached;

b) Series production;

c) Sale of products to the end user.

1.2 According to ARticle 1, last paragraph of Law No 808/1985, firms with a principal activity in the aviation sector are considered those where average billings for the fiscal years prior to the request for admission comes from more than 50 percent of their activities in construction, conversion and overhaul of aircraft, engines, equipment, aviation material and parts of the same. In the case of companies resulting from mergers with other companies, billings for the pre-existing companies will be considered.

1.3 The activities mentioned in point 1.1 above, msut be related to industrial projects for the construction or conversion of aircraft, engines, equipment and aviation material realized within programs of international cooperation on the basis of specific industrial agreements.

Such programs may be considered only if:

They refer to new aviation products or to products which represent a significant and substantial improvement over previously existing products; the participation of Italian companies is not limited to merely supplying.

1.4 New program activities must provide for start-up within 6 months from the presentation of the petition and must in any case be started within 3 months from the decree for the concession of benefits in the sense of Article 4, paragraph 8 of Law No 808/1985.

1.5 Programs initiated prior to the date of presentation of the petition may be admitted for the portion of costs subsequently incurred, prvidded that the activity still to be completed within the program phase subject of the petition itself, are not less than 70 percent of the total costs of the above-mentioned phase, as specified under point 3.1 below.

1.6 The benefits provided by Law No 808/1985 will as a rule not be granted for participation in international programs in direct competition. Possible derogations may be considered as an exception in relation to technological relapses in the participating industries, and in relation to market prospects.

2. List of priorities:

Priority will be considered for programs which:

a) Add to the Italian technological autonomy because they refer to significantly innovative programs of a technological nature;

b) Allow for an increase in management capability at the level of large system architecture;

c) Favor the development of an adequate inducement;

d) Favor cooperation with public enterprises, taking into account activities performed at the time;

e) Are located in the south;

f) Favor the improvement and increase in qualified employment, in particular within the industrial structuree of aviation which exists in the southern region;

g) Raise trade competition on Third World markets, with the sale of systems and subsystems, related technical assistance, as well as the transfer of know-how and associted services;

h) Increase the growth of research activities in development and manufacturing in the private sector.

3. Criteria for the modalities of the preliminary investigation:

3.1 The requests referring to Article 4, paragraph 5 of Law No 808/1985 have been presented to the Ministry of Industry, Commerce and Crafts.

The individual requests will hve to refer separately to each of the following phases in the program:

a) Planning, development, industrialization and start of production;

b) Mass production and marketing.

3.2 The funds of Article 3, letter a) of the law are excluded for costs referring to real estate, general installation, furniture and interior decoration, also the portion of Italian programs subcontracted abroad. Whenever the program portion subcontracted abroad by an Italian company is higher than 25 percent, the program itself will not be granted benefits.

3.2 The committee referred to in Article 2 of Law No 808/1985 formulates its opinion on the program presented based on the preliminary investigation arranged by the Minister of Industry, Commerce and Crafts, with particular reference:

a) to the verification of conditions of acceptability and an assessment of priorities;

b) to the originality of the proposed program within a technological profile;

c) to the potential for trade achievements of the program itself on world markets;

d) to the effect on qualified employment in the sector, especially in the south, and the prospective production increase in the private sector;

e) to possible synergistic effects on other companies in the aviation field and on other sectors to increase overall autonomy of Italian technology.

The committee also expresses its evaluation of a "high," "medium" or "low" level to be attributed to the individual programs with reference to the purposes indicated by the law and other criteria and objectives formulated by CIPI, also in accordance with the third paragraph of Article 4 of Law No 808/1985. To these evaluations correspond, as far as the benefits are concerned, letters a) and b) of Article 3 of Law 808/1985 for funds of varying degree, and more precisely:

For benefits referred to in Article 3, letter a) of Law No 808/1985, 100 percent, 80 percent and 60 percent of the costs of enterprises located in the center-north, and 100, 90, and 75 percent for those located in the areas referred to in Article 1 of the consolidated text of the laws for funds in the south, approved by the president of the republic on 6 March 1978, No 218.

For benefits referred to in Article 3, letter b) of Law No 808/1985, contributions equal to 60 percent, 50 percent and 40 percent of the reference rate in Article 20 of the decree of the president of the republic dated 9 November 1976, No 902, for enterprises located in the center-north; for enterprises located in the areas referred to in Article 1 of the consolidated text of the laws on funds in the south, approved by decree of the president of the republic on 6 March 1978, No 218, the measure is 70 percent, 60 percent and 50 percent respectively.

3.4 The Minister of Industry, Commerce and Crafts accepting the opinion of the committee referred to in Article 2 of Law No 808/1985 formulates in the CIPI his proposal for admission of the benefits program provided by the same law.

3.5 A percentage not less than 40 percent of the available funds has been reserved for programs realized in the south. For that purpose also those programs will be considered which find industrial applications in the south.

Rome, 15 April 1986

The deputy president: ROMITA

8617/12948
CSO: 3698/M134

GRANELLI ON FUTURE INNOVATIONS IN TELECOMMUNICATIONS SECTOR

Milan FATTI E NOTIZIE in Italian 3 May 86 pp 4-5

[Interview with Italian Minister for Scientific and Technological Research Luigi Granelli: "Ten Objectives for the Nineties;" opening four paragraphs are FATTI E NOTIZIE introduction]

[Text] In the next 5 years a package of ten new CNR [National Research Council] "goal-oriented programs" ["progetti finalizzati"] will be implemented. Estimated cost: 500 billion lire. This will be a far-reaching venture, which will also call for more extensive cooperation with industry. Priority will be given to the telecommunications sector, to which the Pirelli group will make a definite contribution.

The Pirelli group was present at the Milan trade fair in April with its own stand located in the research hall.

The exhibition was concluded with a press conference in which the minister for scientific and technological research, M.P. Luigi Granelli, and the president of the CNR, Prof Luigi Bernardi, took part.

FATTI E NOTIZIE questioned minister Granelli concerning the prospects of Italian research activities and Pirelli's contribution to innovation in the telecommunications sector.

[Question] Minister Granelli, on 19 April at the Milan trade fair, you announced a package of 10 new CNR "goal-oriented programs" with considerable public investments in basic and applied research over the next 5 years. What are the goals of this program and what are the prospects for cooperation with private industry?

[Answer] With regard to the programs you mentioned, which were not by chance defined as "new generation," the estimated cost amounts to approximately 500 billion lire over the next 5 years. These programs are specifically aimed at advanced technologies, to be used in Italy's key sectors.

[Question] Could you mention some of them?

[Answer] Certainly: telecommunications, robotics, electronic technology, new materials, fine chemistry [chimica fine]. The goal is to increase cooperation with industry as much as possible in order to carry out programs and to train qualified personnel through scholarships. Therefore, I would like to repeat that the most important objective to be attained through cooperation with industry lies in the high quality of research strategy.

[Question] How can the industries be involved and what are the prospects for this involvement?

[Answer] Let us get things straight from the very start. Industries which want to cooperate cannot expect to benefit from the new generation of goal-oriented programs in the short run. This requires a long term effort. It calls for high quality cooperation, even in terms of production, if we are to formulate these programs differently from the past, and if we are to be in a position to meet the international challenge in the vast field of technological innovation.

[Question] Do you believe that today's public contributions to research in Italy are sufficient?

[Answer] Absolutely not. We must double the financial contributions made to research in the next 5 years. The funds allocated to research are too low in relation to the PIL (Gross National Product). In this respect, the latest financial law is inadequate. But the favorable international economic situation which points to greater flexibility in state budgeting and allocation of resources may help us recover this year what we lost last year. Anyway, as regards the CNR goal-oriented programs, 500 billion lire is not negligible. It is sufficient to grant Italy a wider share in the field of research.

[Question] I would like to ask you some more specific questions. For instance, in the field of telecommunications, what are the main research policies for innovative applications and what might the role of large industry be?

[Answer] The telecommunications field is certainly a sector of crucial importance for the future of the country.

[Question] If my memory serves me well, you referred to a huge investment-- more than 100 trillion lire?

[Answer] Correct, more than 100 trillion lire over 10 years. Of course, when you invest such enormous sums, it may reasonably be assumed that there will be considerable support in terms of scientific research, innovation and development-oriented investments. CIPE (Interministerial Committee for Economic Planning) is considering the possibility of developing a program for coordinating all research in the field of telecommunications. Therefore, it is a question of research which goes far beyond the CNR goal-oriented programs: research plans, which entail national research contracts; experiments as provided for by the law for southern Italy; the industrial programs, which can be financed as provided for under "law 46." In short, all these projects involve a set of initiatives specifically related to telecommunications.

[Question] What contribution could the Pirelli group make to technological progress in Italy in the field of telecommunications?

[Answer] In this respect, it is obvious that the contributions of a group such as Pirelli are particularly significant. Pirelli has great international prestige, is widely respected in the market and has developed its own technology in the field of high tech cables, optical fibers and in numerous other fields. I believe it is just a matter of establishing better connections between the activities of the group and the public sponsored programs, which are worked out from time to time. I am well aware that public-sponsored research, by its nature, tends to overlook immediate industrial interests. The industries themselves cannot expect research to be tailored to their specific market requirements (that research would not pave the way for the future); but even by retaining these distinctions (between public and industrial interests) there are good prospects for effective cooperation between the state -- which strives to attain goals of strategic importance in the telecommunications field -- and the largest

national group of the sector. Cooperation with Pirelli may help attain results, which could satisfy all the parties involved.

[Question] Do you think Italy should take part in the large European research programs, such as the Eureka program?

[Answer] Not only does Italy take part in important European programs, but it also ranks among those countries which have suggested, with far-sightedness, an even more extensive policy in this field. We have long insisted on at least doubling the financial resources allocated to research by the EEC. As regards Eureka, Italy has started to play a major role by supporting the establishment of the "Coordination Secretary" and by making bold proposals for the financing of research at a European level, the strict selection of programs, the promotion of research programs at a national level. All this has been done by Italy to enable all of Europe to bridge the gap separating it from the United States and Japan.

[Question] Does this mean that you hope Italy will aquire a "new presence" among other industrial countries?

[Answer] That is more or less correct. Not only is Italy today allowed to take part in other countries' projects, but it is also a country which is undergoing a rapid process of transformation, a country which sets ambitious targets and more exacting programs for its European partners. We are considering whether or not to take part in the various European programs as well as Eureka, depending on our technological capability, our financial resources, and the actual capabilities of our industry, the CNR and the universities. There are well founded reasons to consider this participation as a high level one. And it is increasingly expanding from the telecommunications field (Esprit, Brite) to biotechnology and to other fields.

[Question] What do you think of Pirelli's plan to establish an "Integrated Technological Center" in the Milan area, the "Bicocca?"

[Answer] You have just mentioned one of the problems I have been dealing with for years and which reminds me of some interesting experiences I had when serving on the Milan Town Council. If you think of the "cabled" Milan of the future, it cannot be questioned that a technological center downtown (representing simultaneously

the meeting point of all the data processing services and a center for study, research and development of the most advanced strategies) will be of great use with respect to the reorganization of the city. Therefore, I support this program in view of its goals, which, as far as we know, are to be attained with the establishment of this technological center. However, I must add that the solution to the problem cannot be restricted to a single undertaking, for the territorial problem is much more complex. Effective scientific centers, technological centers, associations between universities and industry can also be located outside the city, in areas where significant industrial activity is to be found. The whole matter should override detrimental competition and special interests.
Local authorities, especially the "Lombardy Regional Council," should develop wide-range plans, so that all these advanced undertakings do not result in useless duplications or unnecessary competition, but rather in an enrichment of the Milan area and Lombardy of those services that all post-industrial companies will have implemented by that time.

[Question] Large private companies, including Pirelli, have always played an important role in the training of young researchers. What could be done to stimulate a major commitment in this field on the part of private companies and to start new forms of cooperation with public research institutes and agencies?

[Answer] Basically two things: scholarships, structured as effectively as possible, to promote the participation of graduated and trained researchers in national research programs and in international projects, so as to enable our researchers to return to Italy with a more thorough educational background, agreements and arrangements with the universities, with the CNR and with all other research centers not to "convince" them of their immediate industrial interests, but to establish a cooperative link between scientific research, personnel training and industrial development. Finally, to develop cooperation on an extremely broad basis hinging on personnel training, an increase in the number of researchers, and the growth and effective utilization of their resources.

[Boxed, p 5]

The impending approval of the ten so-called "third-generation programs" which has recently been announced by Minister Granelli

substantiates the assumption that the formulation of the CNR goal-oriented programs will certainly prove successful. And the reason for this can be easily explained in a few words. These goal-oriented programs were worked out in the second half of the seventies and were specifically designed to promote scientific know-how to be carried over "into the field" of industrial applications. Independent of the topics they deal with, all of these programs have some common features. They coordinate human resources "from various sources" such as universities, public research centers and industrial laboratories, causing researchers to work side by side in a process of real-time technological transfer. In addition, these programs help provide funds for technological studies and analyses, which domestic industry might otherwise not tackle alone. Usually the programs do not exceed a period of 5 years, after which the knowledge acquired becomes a precious asset to be put to good use at an industrial level for innovative purposes.

The far-sightedness of the formula -- worked out by the then president of the CNR, Mr Alessandro Faedo and wholeheartedly supported by his successors, Mr Ernesto Quagliarello and today, Mr Luigi Rossi Bernardi -- presents some drawbacks which are detrimental both to human and financial resources. The main drawback is the red tape imposed on the CNR by the so-called state law. The funds are often allocated with considerable delay as compared with the requirements of the programs. These delays are certainly harmful, but this situation should be remedied by the long-awaited reform of the CNR, which is still under debate.

But apart from these factors which call for improvement, the national plans of research in various sectors, which entail a greater involvement of the industries, originate from the CNR goal-oriented programs in accordance with law No 46. The programs, which have already been approved, include: microelectronics, energetics, biomedical technologies, fine chemistry and iron metallurgy. Thanks to the value of this formula, president Rossi Bernardi, while waiting for the approval of the new package, managed to arrange in advance numerous strategic programs (including optoelectronics), a solution which is a bridge to keep know-how alive, the progress of which could probably be transferred into new programs to be approved by the government. Finally, it is with the programs of the second and third generation that the CNR has identified the primary sectors, i.e., those of particular technological and innovative relevance.

In the field of communications the most important role is played by optical fibers and their development technology, by optoelectronic devices for the generation and detection of light signals and by optical cables, particularly their laying and connection technologies. The reason is obvious: Approximately 1.5 million km of optical fibers had been installed in the world by the of end of 1985 with an estimated increase of a factor of three per year. The key factors in this growth are components and systems engineering.

The goal-oriented program, "Materials and Devices To Be Used in Electronics," deals with components. The program is directed by professor Antonio Paoletti and will become effective in January 1986. It is based on 150 operative units and implies an expenditure of 125 billion lire over a 5-year period. Its subprogram, "Microwaves and Optoelectronics," directed by professor Vito Svelto of the University of Pavia, comprises six themes: two in microwaves; one in magnetic and optical-magnetic devices; three in optoelectronics, that is, components for optical processing of signals, as well as passive components of integrated optical systems and optical fiber telecommunications.

With regard to systems engineering, according to the prefeasibility study of September 1985 of the third generation goal-oriented program called "Telecommunications," one of the five sub-programs will be completely devoted to research in communications systems based on optical fibers and on high frequency microwaves. With an overall investment of 151 billion lire in 5 years and the involvement of 1,590 man-years (a man year is equivalent to a full time researcher for 1 year assisted by technicians in addition to the standard administrative-logistic support), the aforementioned program should allocate approximately 40 percent of the funds (59.6 billion) to this specific sub-program. The latter has the following goals: the use of a series of optical fiber components for communications systems which could give rise to elements of integrated optics; to provide for the production of optical devices for coherent transmission and of fibers operating at 2-12 micron wavelength (1 micron=one-thousandth of a millimeter); production of prototypes of digital integrated circuits made of gallium arsenide for microwaves. A hundred new specialists are to be trained for this sub-program alone, while approximately 1,000 man-years out of a total of 1,590 are expected to come from the industrial sector.

Finally, the third-generation goal-oriented programs also include: "New Materials" (estimated cost: approximately 150 billion lire over a 5-year period), which comprises 4 sub-programs. Among these are semiconductors to be used in components and optoelectronics, a second priority after new ceramic and glass materials. In fact, the latter are part of the class of the so-called "specialized materials" with value-added potential resulting from their characteristics, which are modified by very advanced technological processes.

The interaction of the different CNR goal-oriented programs is aimed at these new research frontiers; and, in particular, toward a technological integration which is providing worthwhile support to the commitment that large industry, in general, and Pirelli, in particular, have already demonstrated in this field.

8606
CSO: 3698/M172

WEST EUROPE/SCIENTIFIC AND INDUSTRIAL POLICY

CIPI RESOLUTION APPROVES FUNDS FOR ITALIAN RESEARCH PROJECTS

[Editorial Report] Rome GAZZETTA UFFICIALE DELLA REPUBBLICA ITALIANA in Italian on 25 February 1986 publishes a resolution of the Interministerial Committee for the Coordination of Industrial Policy (CIPI) concerning the admission of project proposals to the Special Revolving Fund for technological Innovations. The following are selected records from this document which identify the companies admitted to the fund, research projects, and the terms of financing for government sponsorship:

ELETTRONICA S.P.A., (large firm classification).
Program: Low-frequency monopulse radar.
Admissibility (Law No 46/82, Article 16) : Resolution of the minister for industry, commerce and crafts dated November 8, 1985.
Place of execution: Northern Italy.
Form of financing: Credit available at the annual rate of interest provided by Article 15, Law No 46, February 17, 1982; contribution as per the third paragraph of Article 15, Law No 46, February 17, 1982.
Maximum amount: a) Credit available: 27.5 percent of the allowed costs (3.888 billion lire); b) Contribution: to be worked out by the Ministry of Industry, Commerce and Crafts on the date of the drawing up of the contract as per the third paragraph of Article 16, Law No 46/82, on 27.5 percent of the allowed costs applying the calculation procedure as per Article 15 of the above law.
Amortization: Ten years, plus a term of 5 years of utilization and pre-amortization from the date of contract.
Starting date of the program: January 1, 1985.
Ending date of the program: June 30, 1989.

I.R.C.A.-- INDUSTRIA RESISTENZE CORAZZATE E AFFINI S.P.A., (large firm classification).
Program: Process inovation with resort to robotized systems and control systems for the manufacturing of electric resistance heaters.
Admissibility: (Law No 46/82, Article 16): resolution of the minister for industry, commerce and crafts dated November 8, 1985.
Place of execution: Northern Italy.
Form of financing: Credit available at the annual rate of interest provided by Article 15, Law No 46, February 17, 1982.
Maximum amount: Credit available : 45 percent of the allowed costs (3.642 billion lire).
Amortization: Ten years, plus a term of 5 years of utilization and pre-amortization from the date of contract.
Starting date of the contract: January 1, 1983.
Ending date of the program: December 1, 1989.

IVECO FIAT S.P.A., (large firm classification).
Program: new range of products (light, medium and heavy vehicles) with high innovative content, as well as process innovation.
Admissibility: (law No 46/82, Article 16): resolution of the minister for industry, commerce and crafts dated November 8, 1985.
Place of execution: Northern and Southern Italy.
Form of financing: Credit available at the annual rate of interest provided by Article 15, Law No 46, February 17, 1982; contribution as per the third paragraph of Article 15, Law No 46, February 17, 1982.
Maximum amount: a) Credit available: 27.5 percent of the allowed costs (96.180 billion lire) part of the amount 81.753 billion lire will be charged to the contribution of northern Italy and the remaining 14.427 billion lire will be charged to the contribution of southern Italy; b) Contribution: to be worked out by the Ministry of Industry, Commerce and Crafts on the date of the drawing up of the contract as per the third paragraph of Article 16, Law No 46/82, on 27.5 percent of the allowed costs of which 15 percent will be charged to the contribution ofsouthern Italy, applying the calculation procedure as per Article 15 of the above law.
Amortization: Ten years, plus a term of 5 years of utilization and pre-amortization from the date of contract.
Starting date of the contract: September 1, 1983.
Ending date of the contract: December 31, 1988.

REGINA S.P.A., large firm classification.
Program: Product and technology innovation in components used in the motor industry.
Admissibility: (Law No 46/82, Article 16): resolution of the minister for industry, commerce and crafts dated October 2, 1985.
Place of execution: Northern Italy.
Form of financing: Credit available at the annual rate of interest provided by Article 15, Law No 46, February 17, 1982.
Maximum amount: Credit available: 45 percent of the allowed costs 10.014 billion lire.
Amortization: Ten years, plus a term of utilization and pre-amortization from the date of contract.
Starting date of the program: January 1, 1984.
Ending date of the program: December 31, 1986.

8610
CSO: 3698/M163

WEST EUROPE/SCIENTIFIC AND INDUSTRIAL POLICY

ITALIAN RESEARCH PROJECTS ACCEPTED FOR SPECIAL GOVERNMENT FUNDING

[Editorial Report] Rome GAZZETTA UFFICIALE DELLA REPUBBLICA ITALIANA in Italian on 6 June 1986 publishes a resolution adopted by the Ministry for Scientific and Technological Research concerning the admission of company research proposals to the special fund for applied research . The following are selected records from this document which identify the projects to be funded, fields of research, and the terms of financing for government sponsorship:

CISE (CENTRO INFORMAZIONI STUDI ED ESPERIENZE S.P.A)
Milan; large firm classification.
Research Location: Northern Italy.
Research Program: Development of a mobile system provided with compatible laser sources, for remote chemical and physical analysis.
Form of Financing: Credit available at the annual rate of interest provided for by decree of the Treasury Ministry; expense contribution.
Maximum amount: a) Credit available: 1.059 billion lire, in no case to exceed 35 percent of approved costs; b) contribution: 1.059 billion lire, in no case to exceed 35 percent of approved costs.
Duration: 7 (seven) years of amortization beyond the research period which cannot exceed 3 years and 6 months.
Amortization: In 14 (fourteen) semi-annual installments, constant, deferred, inclusive of capital and interest, starting not beyond the second semi-annual term following the date of effective conclusion of the research period.
Beginning date of the program: April 1, 1986.
Special conditions: Joint acceptance with Turin's "Space Laser S.R.L." of same technical specifications (Prat. 47957).

CSELT (CENTRO STUDI E LABORATORI TELECOMMUNICATIONS S.P.A.).-- Turin; ITALTEL (SOCIETA ITALIANA TELECOMMUNICATIONS S.P.A.).-- Milan, large firm classification.
Research Location: Northern Italy.
Research Program: Advanced techniques and systems for optical communications-- Components and systems for optical fiber transmission.
Form of financing: Credit available at the annual rate of interest provided for by decree of the Treasury Ministry; expense contribution.
Maximum amount: a) Credit available: 4.823 billion lire, in no case to exceed 25 percent of 1/2 of the allowed costs, equal to 38.585 billion lire; b) contribution: 4.823 billion lire, in no case to exceed 25 percent of 1/2 of the allowed costs, equal to 38.585 billion lire.
Duration: 8 (eight) years of amortization beyond the research period which cannot exceed 6 years.
Amortization: In 16 (sixteen) semi-annual installments, constant, deferred, inclusive of capital interest, starting not beyond the second semi-annual term following the date of the effective conclusion of the research period.
Beginning date of the programs: January 1, 1985.
The aforesaid assistance is subject to approval by the EEC commission.

FIAR (FABBRICA ITALIANA APPARECCHIATURE RADIOELETTRICHE S.P.A.)-- Milan; large firm classification.
Research Location: Northern Italy.
Research Program: Avionic radar for target control.
Form of financing: Credit available at the annual rate of interest provided for by decree of the Treasury Ministry; expense contirbution.
Maximum amount: a) Credit available: 2.76 billion lire, in no case to exceed 25 percent of 1/2 of the allowed costs, equal to 22.087 billion lire; b) contribution: 2.76 billion lire, in no case to exceed 25 percent of 1/2 of the allowed costs, equal to 22.087 billion lire.
Duration: 8 (eight) years of amortization beyond the research period which cannot exceed 6 years.
Amortization: In 16 (sixteen) semi-annual installments, constant, deferred, inclusive of capital and interest, starting not beyond the second semi-annual term following the date of effective conclusion of the research period.

Beginning date of the program: January 1, 1986.

FIAR (FABBRICA ITALIANA APPARECCHIATURE RADIOELETTRICHE S.P.A.)-- Milan, large firm classification.
Research Location: Northern Italy.
Research Program: Electronic sensors for target control.
Form of financing: Credit available at the annual rate of interest provided for by decree of the Treasury Ministry; expense contribution.
Maximum amount: a) Credit available: 1.102 billion lire, in no case to exceed 20 percent of 1/2 of the allowed costs, equal to 11.023 billion lire; b) contribution: 1.102 billion lire, in no case to exceed 20 percent of 1/2 of the allowed costs, equal to 11.023 billion lire.
Duration: 8 (eight) years of amortization beyond the research period which cannot exceed 6 years.
Amortization: In 16 (sixteen) semi-annual installments, constant, deferred, inclusive of capital and interest, starting not beyond the second semi-annual term following the date of effective conclusion of the research period.
Beginning date of the program: October 1, 1983.

F.O.S. (FIBRE OTTICHE SUD S.P.A.).- Battipaglia (Salerno), large firm classification.
Research Location: Northern and Southern Italy.
Research Program: Technological development of optical fibers for telecommunications.
Form of financing: Credit available at the annual rate of interest provided for by decree of the Treasury Ministry; expense contribution.
Maximum amount: a) Credit available: 3.95 billion lire, in no case to exceed 35 percent of the allowed costs, of which 344 million lire are to be ascribed to the northern Italy share, and 3.606 billion lire are to be ascribed to the southern Italy share, not to exceed 40 percent of the allowed costs; b) contribution: 3.95 billion lire, in no case to exceed 35 percent of the allowed costs, of which 344 million are to be ascribed to the northern Italy share, and 3.606 billion lire are to be ascribed to the southern Italy share, not to exceed 40 percent of the allowed costs.
Duration: 8 (eight) years of amortization beyond the research period which cannot exceed 5 years.

Amortization: In 16 (sixteen) semi-annual installments, constant, deferred, inclusive of capital and interest, starting not beyond the second semi-annual term following the date of effective conclusion of the research period.
Beginning date of the program: June 1, 1985.

ITALTEL-- SOCIETA' ITALIANA TELECOMUNICAZIONI S.P.A.--Milan, large firm classification.
Research Location: Northern Italy.
Research Program: New control center for radio channels, handsets and terminals for a mobile cellular UHF system with 200 channels.
Form of financing: Credit available: 3.548 billion lire, in no case to exceed 70 percent of 1/2 of the allowed costs, equal to 10.138 billion lire.
Duration: 7 (seven) years of amortization beyond the research period which cannot exceed 7 years.
Amortization: In 14 (fourteen) semi-annual installments, constant, deferred, inclusive of capital and interest, starting not beyond the second semi-annual term following the date of effective conclusion of the research period.
Beginning date of the program: January 1, 1982.

MANDELLI S.P.A.-- Piacenza; MANDELLI INDUSTRIALE S.P.A.-- Piacenza; Large firm classification.
Research Location: Northern Italy.
MANDELLI
Research Program: Mechanical modules for second generation FMS.
Form of financing: Credit available at the annual rate of interest provided for by decree of the Treasury Ministry; expense contribution.
Maximum amount: a) Credit available: 2.629 billion lire, in no case to exceed 35 percent of the allowed costs; b) contribution: in no case to exceed 35 percent of the allowed costs.
Duration: 8 (eight) years of amortization beyond the research period which cannot exceed 4 years.
Amortization: In 16 (sixteen) semi-annual installments, constant, deferred, inclusive of capital and interest, starting not beyond the second semi-annual term following the date of effective end of the research period.

Beginning date of the program: July 1, 984.
Special conditions: Guaranty by "Mandelli finanziaria S.P.A."-- Piacenza.

OFFICINE SAVIO S.P.A.-- Pordenone; SAPRI (SAVIO PRIMA ROBOTICA INDUSTRIALE S.P.A.)-- Imola (Bologna), large firm classification.
Research Location: Northern Italy.
Research Program: Systems for automation of industrial processes.
Form of financing: Credit available at the annual rate of interest provided for by decree of the Treasury Ministry; expense contribution.
Maximum amount: a) Credit available: 1.4 billion lire, in no case to exceed 35 percent of 1/2 of the allowed costs, equal to 8 billion lire; b) contribution: 1.4 billion lire, in no case to exceed 35 percent of 1/2 of the allowed costs, equal to 8 billion lire.
Duration: 8 (eight) years of amortization beyond the research period which cannot exceed 6 years.
Amortization: In 16 (sixteen) semi-annual installments, constant,deferred, inclusive of capital and interest, starting not beyond the second half-yearly term following the date of effective conclusion of the research period.
Beginning date of the program: January 1, 1982.
Particular conditions: Guaranty by SOFID S.P.A.-- Rome.

SELENIA-- INDUSTRIE ELETTRONICHE ASSOCIATE S.P.A.-- Naples; large firm classification.
Research Location: Northern and Southern Italy.
Research Program: Advanced instruments for improving the efficiency of the software production and handling process.
Form of financing: Credit available at the annual rate of interest provided for by decree of the Treasury Ministry; expense contribution.
Maximum amount: a) Credit available: 3.863 billion lire, in no case to exceed 35 percent of the allowed costs, of which 1.169 billion lire are to be ascribed to the northern Italy share, and 2.694 billion lire are to be ascribed to the southern Italy share, not to exceed 40 percent of the allowed costs.
Duration: 8 (eight) years of amortization beyond the research period which cannot exceed 6 years.

Amortization: In 16 (sixteen) semi-annual installments, constant, deferred, inclusive of capital and interest, starting not beyond the second semi-annual term following the date of the effective end of the research period.
Beginning date of the program: January 1, 1985.
Special conditions: Guaranty by STET-- Societa Finanziaria Telefonica per Azioni-- Turin.

SELENIA-- INDUSTRIE ELETTRONICHE ASSOCIATE S.P.A.-- Naples; large firm classification.
Research Location: Northern and Southern Italy
Research Program: Advanced ATC systems.
Form of financing: Credit available at the annual rate of interest provided for by decree of the Treasury Ministry; expense contribution.
Maximum amount: a) Credit available: 2.72 billion lire, in no case to exceed 35 percent of the allowed costs, of which 1.982 billion lire are to be ascribed to the northern Italy share, and 738 million lire are to be ascribed to the southern Italy share, not to exceed 40 percent of the allowed costs; b) contribution: 2.72 billion lire, in no case to exceed 35 percent of the allowed costs, of which 1.982 billion lire are to be ascribed to the northern Italy share, and 738 million lire are to be ascribed to the southern Italy share, not to exceed 40 percent of the allowed costs.
Duration: 5 (five) years of amortization beyond the research period which cannot exceed 2 years and 4 months.
Amortization: In 10 (ten) semi-annual installments, constant, deferred, inclusive of capital and interest, starting not beyond the second semi-annual term following the date of effective conclusion of the research period.
Beginning date of the program: February 17, 1984.
Special conditions: Guaranty by STET-- Societa Finanziaria Telefonica per Azioni-- Turin; Final approval of financing dependent on the continuation of research in order to achieve the final goals of the entire project.

SELENIA-- AUTOTROL S.P.A.-- Genova; large firm classification.
Research Location: Northern Italy.

Research Program: CAD & CAE work stations.
Form of Financing: Credit available at the annual rate of interest provided for by decree of the Treasury Ministry; expense contribution.
Maximum amount: a) Credit available: 1.839 billion lire, in no case to exceed 35 percent of 1/2 of the allowed costs, equal to 10.513 billion lire; b) contribution: 1.839 billion lire, in no case to exceed 35 percent of 1/2 of the allowed costs, equal to 10.513 billion lire.
Duration: 8 (eight) years of amortization beyond the research period which cannot exceed 6 years.

Amortization: In 16 (sixteen) semi-annual installments, constant, deferred, inclusive of capital and interest, to start not beyond the second semi-annual period following the effective date of conclusion of the research.
Beginning date of the research: January 1, 1985.
Special conditions: Guaranty by STET (Societa Finanziaria Telefonica per Azioni)-- Turin.

8615
CSO: 3698/M145

EAST EUROPE/FACTORY AUTOMATION

BRIEFS

ROBOTS IN HUNGARIAN FACTORIES--Budapest, 15 Jul (MTI)--Robotization, the automation of major working processes, is being carried out at the Csepel factories. Part of the robots are manufactured by the Csepel heavy engineering factory under a license of the Japanese Daido Company. The range of robots and manipulators is being expanded in cooperation with Daido. The staff of the Csepel metallurgical complex have designed a system of machinery consisting of two robots, manipulators and auxiliary units which are to be put into operation in the next few days. In the mechanical unit the transport system and the methods of material conveyance at the induction furnaces have been adopted to the robots automatizing the pressing processes. Less labour will be required. The Csepel factory is going to automatize the heavy-duty gap rolls, and robotize the cleansing of casting dies. The staff members of the Csepel factory have recently visited the Daido company and the Nissan car factory to study high-tech robots. It is hoped that the technical experts of the Japanese company can be relied on to supply consulting services for the manufacture of further robots and that robots manufactured at Csepel, at a later date, can be exported. [Text] [Budapest MTI in English 0835 GMT 15 Jul 86] /9604

CSO: 2020/170

EAST EUROPE/MICROELECTRONICS

GOALS OF HUNGARY'S ELECTRONIZATION PROGRAM LOWERED

Situation of Hungarian Microelectronics

Budapest HETIVILAGGAZDASAG in Hungarian 2 Oct 85 pp 34-35

[Article by Pal Reti]

[Text] The future of microelectronics, the youngest branch of Hungarian industry, was discussed recently by specialiats at a conference held at Balatonfured. Domestic chip manufacture, initiated following the several-billion-forint central program, has few ties connecting it to the markets of the leading capitalist countries, but through the trade carried on with the CEMA countries, it can satisfy a large part of the domestic demand for electronic components. In the coming years, however, according to the leaders in this field, additional billions of forints will be needed to make sure that Hungarian industry's lag behind the world's leading microelectronics firms at least does not grow larger.

At the end of the 1970's the leaders of Hungary's electronics industry argued that the existence of their entire branch of industry was at stake if they did not quickly obtain central support from the state. The program worked out for 1979 would still have allocated 50 billion forints to the development of domestic electronics, but the economic situation became unfavorable to major state investment. After repeated streamlining, the 1981 decision of the Council of Ministers finally--with a budget of 4-5 billion forints--approved central support only for the electronic component industry, and even within that allocation, the bulk of the support was concentrated on the creation of a domestic chip-manufacturing capability.

The fundamental question at that time could also have been worded this way: Should the country be electronized on its own strength, on the basis of domestic and socialist components, or should there be support for the integration of the Hungarian electronics industry into the world market on the basis of the independent development of companies, which would be exposed to the international market's value judgment? However, the question was not worded this way, and the direction of development was decided from the outset: the electronic component industry must be developed on the basis of domestic and CEMA needs, essentially irrespective of whether the

products so created would be competitive on the capitalist markets. This concept was indirectly supported by the Western technological embargo, which became more severe at the beginning of the 1980's, and the revived industrial solidarity of the socialist countries also confirmed this view. This was so because when it became clear that Hungary's electronics industry too was ready for increased integration into the CEMA self-sufficiency system, sources of supply in the socialist countries began to open up. Representatives of the Ministry of Industry prepared cooperation agreements, one after another, with the electronics ministries of the socialist countries of Europe. They purchased Soviet and GDR licenses for domestic chip manufacture, and Soviet technological equipment was imported, including equipment that was unavailable from the West owing to the embargo.

From the economic standpoint, the central development program was born under an unlucky star. Accepted at a time when investments were being drastically reduced, the program suffered a setback as early as 1982, the first year of its realization, as a result of the domestic limitation of capitalist imports. It is largely because of this and other import restrictions that investments for component development, which are somewhat removed from the focus of central attention, have been late or nonexistent. Production in this area has reached only 78-80 percent of the amount planned in the program. At the same time, the Microelectronics Enterprise (MEV)--which now has brought its share of domestic component manufacture up to 30 percent and which received the largest amount of support for the creation of chip manufacturing--has been able, for the most part, to fulfill the plans.

It appears that MEV, created by the central development program, will continue--as the industry guidance system's own child--to succeed in doing what has been impossible over a period of decades for medium-sized component manufacturers with a great tradition behind them, such as Remix or Kontakta, and even for such a giant as United Incandescent Works. That is to say, it will be able to obtain significant amounts of state money for the manufacture of electronic components. But MEV will also need continuous support, since microelectronic component manufacture may be compared to a fast-moving train: getting off it is very dangerous. A five-year plan cycle is quite enough to make the level of technology completely obsolete, and in order to keep pace--which in itself means, at best, lagging 5-10 years behind state-of-the-art technology--it is not enough to introduce some renovation or updating; completely new technological equipment would have to be installed.

With the creation of MEV, Hungarian industry managed to bring up its production of so-called active elements (integrated circuits, transistors, diodes) to about 70 percent of domestic demand. This includes domestic marketing and those of MEV's products marketed in the socialist countries which it considers a basis of exchange for the utilization of similar components. If MEV is able under the next five-year plan to build up its new plant--with a new basis contribution from the state, of course--which can be expected to cost 1.5 times as much as the investment that has now been completed, then it will be able to meet 70-80 percent of domestic demand. Otherwise, the specialists warn, the proportion will drop to 20 percent, precisely because of the rapid succession of generations mentioned earlier.

However, MEV must not only succeed in its fight for new support but also contend with its own customers in order to win their confidence. Users point out that the domestic supply of electronic components deteriorated last year and this year--exactly those two years in which MEV's new capacity came on line. The reason for the deterioration of the supply was that import possibilities did not keep pace with increased needs. For example, the import of integrated circuits (IC) from capitalist countries nearly doubled from 1983 to 1984, but even so, with the new domestic IC included, there were not enough to meet the demand.

The sharp new increase in component imports from capitalist countries is yet another argument on the side of those favoring self-sufficiency, who are presumably right in believing that the trends of the 1970's will be impossible to sustain. During that decade, imports of capitalist components was sold by Hungarian industry almost exclusively in our country and the socialist countries.

In recent years industrial management, for its own part, seems to have given up the idea that we must make great efforts to increase our exports to capitalist countries and that this will bear fruit in the domestic electronic industry as well. The strategy today seems to be that the domestic component industry should be built up to the maximum and should be capable of meeting a larger and larger proportion of domestic needs, in part directly and in part by creating a basis of exchange for the import of socialist components. Capitalist imports would have to be restricted to state-of-the-art components and those produced in very small quantities.

One may wonder whether under such conditions there is any hope at all for making Hungary's electronics industry more competitive on the world market. Leaders in this branch of industry prefer to speak of the electronization program of the national economy, rather than of competitiveness. They point to the GDR or Czechoslovakia, where the entire process of electronization is more advanced despite the fact that self-sufficiency based on CEMA is almost complete. (For example, in those countries special individual permits from the authorities are needed in some cases for the incorporation of a Western electronic component into a particular product.) In any case, say many Hungarian industrial leaders, those domestic electronic companies which make exports to capitalist countries will always be able to obtain the necessary Western components.

Hungarian electronic products, such as computers and communications technology equipment, undoubtedly have good markets in the socialist countries. They are often given the highest rating within CEMA. It does not take any special gift of prophecy, however, to predict the expected course of events. All we need do is consider some of the traditional branches of the machinery industry which were in a similarly favorable position a decade or two ago but which today, with their "one-market" products, are completely at the mercy of their customers, so that their only chance for survival is to have the product included "at any cost" in the international agreements signed with our CEMA partners.

If we assume that the factors deemed to be unalterable are in fact unalterable, we can hardly see any other path to follow in development. The import restrictions of three years ago drastically convinced companies that no matter how much self-control they displayed in the area of capitalist imports, there could arise a situation in which they would be unable to obtain even those components which are needed for continuous production, even if such unavailability meant shutting down the operation. This gave domestic companies a much keener awareness of their interdependence. Even though the global market and global standards may be slowly forced out of the picture, there is still hope for speeding up the process of electronization here at home through closer voluntary cooperation between companies.

Competition in EOC's

Budapest HETIVILAGGAZDASAG in Hungarian 2 Oct 85 p 34

[Text] EOC (equipment-oriented circuits) was a watchword of the central development program for electronic components. The creators of the original concept believed that the manufacture of these components, which are designed according to the user's requirements and are produced in relatively small quantities, constituted a technological niche in the world electronics industry in which Hungarian industry could also find a place. It is true that the world market for EOC's has been expanding rapidly since that time, but the waves of that expansion have been slower than expected in reaching us.

Even today, the Hungarian electronics industry's use of such integrated circuits amounts to only a small percentage; in the overwhelming majority of cases, it uses so-called catalog circuits, produced by the major Integrated Circuit IC manufacturers in quantities running in the many millions, and the market for them is 90 percent dominated by American and Japanese firms.

It has become clear by now that no matter how up-to-date a solution individually designed circuits represent, their role in our domestic electronics industry's utilization of components is bound to remain marginal for a long time; even MEV must meet its needs primarily with catalog circuits. This is one reason which makes it noteworthy that parallel with the widely publicized central chip investments, much more quietly--but followed with keen interest by those in the field--another microelectronics investment project, also aimed at the domestic EOC market, has taken place in Hungary. The Communications Technology Cooperative (HT) was the first among domestic electronics firms to realize how advantageous it would be if it condensed into a single chip of its own design the functions of the devices it manufactures. The cooperative decided in 1981 to establish its own microelectronics plant, in which it would manufacture equipment-oriented circuits for its own needs and for sale to outsiders.

Most of the technological equipment was purchased from the United States. The cooperative's specialists made several visits to California's Silicon Valley in order to master the science of chip manufacture.

The cooperative's chip plant started production several months ago, not long after the start of MEV's production lines. One may presume that there will not be any sharp competition between the two firms, since HT's equipment is suitable only for carrying out the concluding phases of chip manufacture. Consequently the semi-finished chips--owing to HT's limited import opportunities--will have to be purchased from MEV, its potential competitor.

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